

QST

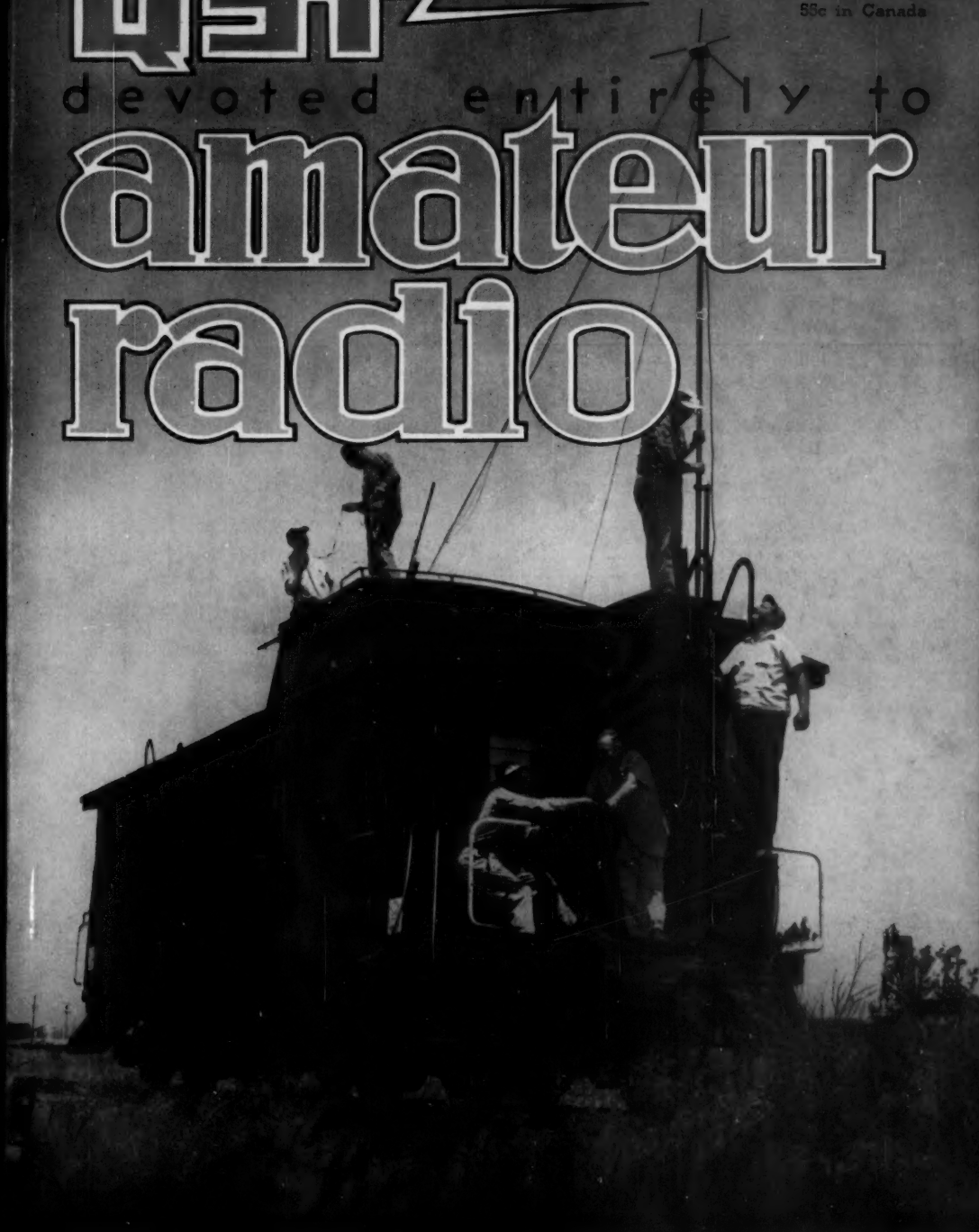
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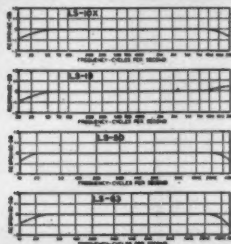


TYPICAL UNITS

LINEAR STANDARD series
Linear Standard units represent the acme from the standpoint of uniform frequency response, low wave form distortion, thorough shielding and dependability. LS units have a guaranteed response within 1db. from 20 to 20,000 cycles.

Hum balanced coil structures and multiple alloy shielding, where required, provide extremely low inductive pickup.

These are the finest high fidelity transformers in the world. 85 stock types from milliwatts to kilowatts.



LS-10X Shielded Input
Multiple line (50, 200, 250, 500/600, etc.) to 50,000 ohms ... multiple shielded.

LS-19 Plate to Two Grids
Primary 15,000 ohms.
Secondary 95,000 ohms C.T.

LS-50 Plate to Line
15,000 ohms to multiple line ... +15 db. level.

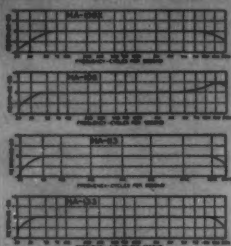
LS-63 P.F. Plates to Voice Coil
Primary 10,000 C.T. and 6,000 C.T. suited to Williamson, MLF, u-linear circuits.
Secondary 1.2, 2.5, 5, 7.5, 10, 15, 20, 30 ohms. 20 watts.



CASE LS-1 LS-2 LS-3
Length 3 1/4" 4-7/16" 5-13/16"
Width 2 1/4" 3 1/4" 5"
Height 3 1/4" 4-3/16" 4-11/16"
Unit Wt. 3 lbs. 7.5 lbs. 15 lbs.

HIPERMALLOY series

This series provides virtually all the characteristics of the Linear Standard group in a more compact and lighter structure. The frequency response is within 1 db. from 30 to 20,000 cycles. Hipermalloy nickel iron cores and hum balanced core structures provide minimum distortion and low hum pickup. Input transformers, maximum level +10db. Circular terminal layout and top and bottom mounting.

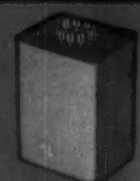


HA-100X Shielded Input
Multiple line to 60,000 ohm grid ... tri-alloy shielding for low hum pickup.

HA-100 Plate to Two Grids
15,000 ohms to 135,000 ohms in two sections ... +12 db. level.

HA-113 Plate to Line
15,000 ohms to multiple line ... +12 db. level ... 0 DC in primary.

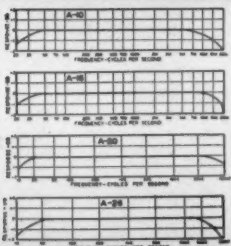
HA-133 Plate (90) to Line
15,000 ohms to multiple line ... +15 db. level ... 6 Ma. DC in primary.



CASE HA-1 HA-2
Length 2 1/4" 3 1/4"
Width 1-15/16" 2-13/16"
Height 3 1/4" 3 1/4"
Unit Weight 2 lbs. 8 lbs.

ULTRA COMPACT series

UTC Ultra Compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. The frequency response is within 2 db. from 30 to 20,000 cycles. Hum balanced coil structure plus high conductivity die cast case provides good inductive shielding. Maximum operating level is +7db. Top and bottom mounting as well as circular terminal layout are used in this series as well as the ones described above.

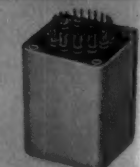


A-10 Line to Grid
Multiple line to 50,000 ohm grid.

A-18 Plate to Two Grids
15,000 ohms to 80,000 ohms, primary and secondary both split.

A-20 Mixing Transformer
Multiple line to multiple line for mixing mikes, lines, etc.

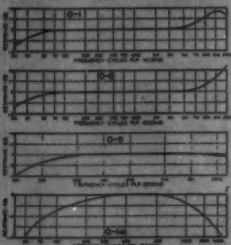
A-25 P.F. Plates to Line
30,000 ohms plate to plate, to multiple line.



A CASE
Length 1 1/4"
Width 1 1/4"
Height 2"
Unit Weight 1/2 lb.

DUNCEP series

UTC Duncep units are ideal for portable, concealed service, and similar applications. These units are extremely compact ... fully impregnated and sealed in a drum housing. Most items provide frequency response within 1 db. from 30 to 20,000 cycles. Maximum operating level 6 db. These units are also available in our stock P series which provide plug-in base. The O-15 is a new line to grid transformer using two heavy gauge Hipermalloy shields for high hum shielding.



O-1 Line to Grid
Primary 50, 200/250, 500/600 ohms to 50,000 ohm grid.

O-8 Plate to Two Grids
15,000 ohms to 95,000 ohms C.T.

O-9 Plate (90) to Line
Primary 15,000 ohms, Secondary 30, 200/250, 500/600.

O-14 50:1 Line to Grid
Primary 200 ohms, Secondary .5 megohm for mike or line to grid.



DUNCEP CASE
Diameter 7/8"
Height 1-3/16"
Unit Weight 1 oz.

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In our 25th year of service

Why Collins SSB signals **STAY CLEAN**

One of the reasons why single sideband is becoming so popular on the amateur bands is the narrow bandwidth required. It was thought at one time that the generation of a single sideband signal was a difficult technical job. Even though SSB might be difficult it is worth the effort because it reduces QRM. Actually, it is easier and simpler than the generation of an amplitude modulation signal.

The SSB signal can be generated in either of two ways — the filter method or the phasing method. In the phasing method, the sideband balance is dependent upon phase and amplitude control in both the audio and r-f circuits. If this control is exact and can be maintained over the operating life of the equipment, then a clean SSB signal is available for amplification. If phase or amplitude variations exist because of temperature, humidity or aging, then the SSB signal becomes less clean and the undesired sideband begins to appear.

Now look at the balanced modulator and filter circuit used by Collins. This circuit makes a clean SSB signal and it stays that way. These are the reasons the previous statement is true. The balanced modulator generates a double sideband signal and suppresses the carrier by 30 db over a long period of time. The Mechanical Filter,

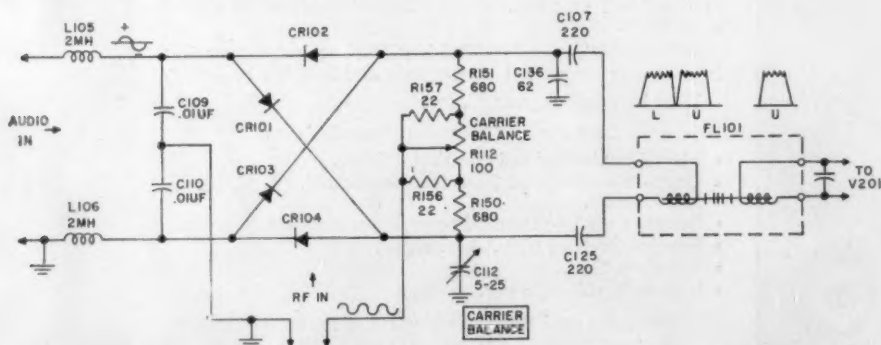
being 3 kc wide, passes only the desired sideband and attenuates the undesired sideband by 50 db. Also, at the carrier frequency, 20 db added attenuation of the carrier means that the carrier is balanced to a low level at the factory and it stays there. Temperature, humidity and aging do not affect the hermetically-sealed Mechanical Filter. It is composed of highly accurate metal discs which stay on frequency and insure a constant passband.

With the Mechanical Filter in a sideband separation circuit, the operator is assured a good voice frequency circuit without audio filters. The passband of the Mechanical Filter automatically attenuates those audio components below 300 cps and above 3 kc.

The filter method of generating a single sideband signal is economical to use and it is the best method of SSB generation. Why not join the ranks of satisfied Collins-equipped hams using these advanced techniques?

E. W. Pappenfus

E. W. Pappenfus
Director, "A" Division Engineering
Collins Radio Company



Collins CREATIVE LEADER IN COMMUNICATION **COLLINS**



QST

JUNE 1958

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Modern Eimac ceramic tubes offer the equipment designer many important extras. Among them is the ability to withstand impact without impairing electrical characteristics. The photograph dramatically shows what happens to a 250 watt glass envelope tube and an Eimac 300 watt ceramic tube when both are dropped from a height of seven feet. The ceramic tube "took it".

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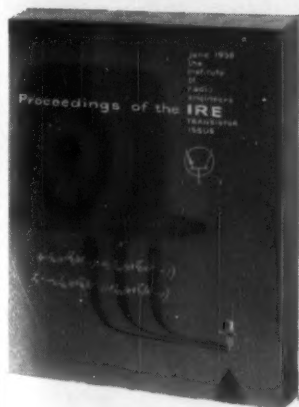
Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radioclub reports are also desired by SCMs for inclusion in *QST*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. All amateurs in the United States and Canada are invited to join the Amateur Radio Emergency Corps (see for Form 7).

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*Official appointed to act temporarily in the absence of a regular official.

THE DECADE OF THE TRANSISTOR

IRE commemorates the tenth anniversary of a major breakthrough in solid state electronics by devoting the entire June issue of PROCEEDINGS OF THE IRE to an up-to-date summary of progress and advances in transistors. So small that many can be held in the palm of one hand, these tiny components have ended our 50 year dependence on vacuum tubes. Without transistors, our intricate guidance and communication systems for missiles would be incredibly big and heavy. With them, whole new technologies are being developed, not only for defense but for industry and commerce as well.



June Issue of Proceedings of the IRE is the New Standard Reference Work on Transistors

Only once before has PROCEEDINGS devoted an entire issue to transistors. That was in November, 1952. Despite a substantial overprinting, every copy was sold within 3 months. This classic issue, coming at a time when there were no books and few papers on the subject, is still considered one of the basic references on the subject...a suitable companion to the definitive Solid-State Electronic issue of December, 1955 and the Ferrites issue of October, 1956.

Now, to mark the tenth anniversary of the transistor, PROCEEDINGS presents the latest advances in theory and application in the June, 1958 issue. Here you will find introductory articles by its inventors—Shockley, Bardeen and Brattain—specially invited papers reviewing progress in all facets of the subject, contributed papers reporting the latest and more important advances in the field. Be sure to order your copy, today!

Partial Contents:

- "The Technological Impact of Transistors," by J. A. Morton & W. J. Pietenpol, Bell Labs.
- "The Status of Transistor Research in Compound Semiconductors," by D. A. Jenny, RCA.
- "Survey of Other Semiconductor Devices," by S. J. Angello, Westinghouse.
- "Electrons, Holes and Traps," by W. Shockley, Shockley Semiconductor Lab.
- "Recombination in Semiconductors," by G. Bemske, Bell Labs.
- "Noise in Junction Transistors," by A. van der Ziel, University of Minnesota.
- "Formation of Junction Structures by Solid State Diffusion," by F. M. Smits, Bell Labs.
- "Germanium and Silicon Rectifiers," by H. Henkels, Westinghouse.
- "The Potential of Semiconductor Diodes in High-Frequency Communications," by A. Uhlir, Bell Labs.
- "Advances in the Understandings of the P-N Junction Triode," by R. L. Pritchard, Texas Instruments.
- "Power Transistors," by M. A. Clark, Pacific Semiconductors.
- "Application of Transistors in Computers," by R. A. Henle & J. L. Walsh, IBM.
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- "Characteristics Data on Silicon and Germanium," by E. Conwell, Sylvania.

The Institute of Radio Engineers

1 East 79th St., New York 21, N. Y.

☐ Enclosed is \$3.00

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

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"It Seems to Us..."



WORLD ALLOCATIONS PROPOSAL

For some eighteen months past, Government-industry groups have been meeting in Washington to formulate the official views of the United States toward the international telecommunications conference to be held in Geneva, Switzerland, in 1959. This procedure is somewhat different than that followed in some other countries, where only the governments dictate official views; in the U.S., representatives of the various non-Government radio services also participate in official deliberations, and of course ARRL has been present to speak for the amateur service in such meetings.

This preparatory work has proceeded apace in the general fields of operating regulations, technical requirements, and the like, but little progress has been made in the field of frequency allocation while waiting an announcement of the views of agencies of the Government as a basis for discussion. Thus the preparatory work took a big step forward in mid-April when the Federal Communications Commission and the Interdepartment Radio Advisory Committee jointly issued their proposals for a new frequency spectrum allocations.

Especially in view of some of the rumors which have been going through amateur ranks in recent months concerning our future, it is a matter of particular pleasure to report that the FCC-IRAC proposals include provision for continuance of *every present amateur frequency assignment* (with certain changes in u.h.f. bands to be detailed in a moment), including availability of the Loran band and the 27-Mc. ISM band!

At the moment this proposal is not yet the official U. S. position; it must be considered and approved by the Government-industry frequency committees. However, it is expected to be at least the basis of the final U. S. position and more than likely adopted substantially — if not precisely — as proposed. Inasmuch as the proposal is to continue amateur privileges as at present (with the u.h.f. modifications), we feel it is a significant victory for the amateur service; the Commission and the Government services have been confronted with exceedingly difficult problems by the demands of the other services, and the decision to hold the line on amateur bands — rather than take the easy solution by cutting into them — has only increased those problems. We can imagine no finer testimonial to their views of our worth.

The changes in the amateur u.h.f. (actually,

above 220 Mc.) bands are already in effect domestically. They result from national defense considerations — of sufficient urgency that, in compliance with a request from the Office of Defense Mobilization, FCC has put them into effect immediately. The growth of radar and associated techniques of radio-navigation and radiopositioning, particularly with the coming of the "space age," has required the expansion of available space for those facilities. Several radio services other than amateur have had their u.h.f. assignments withdrawn or shifted to provide for such expansion — without notice or hearing. In the case of amateur bands above 220 Mc., the Government feels that radiopositioning and amateurs can share with little or no mutual interference (under Executive powers, such military use of our u.h.f. bands has been made for years with practically no difficulty). The problem, however, is that with the exclusive amateur assignments existing in the past, an amateur has had the legal right to interfere with a radiopositioning operation despite its national-defense nature. This possibility the Government can no longer face, in the national interest. The action the Commission has now taken, therefore, officially admits Government radiopositioning to amateur bands above 220 Mc. (except the 21,000 Mc. band), with positioning afforded priority in the event of interference by amateurs.

We can tell you that the expectation of all concerned is that there will be little — if any — practical effect on amateur u.h.f. operation. There may be isolated cases where an individual amateur may be found to interfere with Government radiopositioning work. In such event the amateur may be required to shift frequency within the band or take some other steps as necessary to alleviate the interference. In some areas, as in the immediate vicinity of missile installations, certain restrictions may be applied to amateur use of a u.h.f. band, such as the one we have had for many years on 220 Mc. use in the vicinity of White Sands, New Mexico. It is expected, however, that such instances will occur rarely, if ever.

The text of the new rules governing our above-220 Mc. operation is published in "Happenings" this month.

So much for details. In the broad picture we of course have the world conference hurdle still ahead of us, next year. But we do appear to be headed for that conference with the United States once again backing amateurs to the hilt.

(See page 48)

A.R.R.L. PACIFIC DIVISION CONVENTION

Fresno, Calif. — June 7-8

The Fresno Amateur Radio Club will be host to the ARRL Pacific Division Convention in Fresno on June 7 and 8. Registration fee is \$7.75, which includes the banquet. Pre-registration should be postmarked no later than midnight June 2, and mailed to Radio Amateur Convention, P. O. Box 783, Fresno, Calif.

Harry Engwicht, W6HC, Pacific Division Director, and George Hart, W1NJM, National Emergency Coordinator, will be honored guests at the banquet. There will be open-forum discussions, commercial displays, entertainment, and a Wouff-Hong initiation put on by the Trowel Radio Club. Special technical sessions will be held by groups including s.s.b., RTTY, v.h.f., novice, and traffic. Some of these groups will also hold informal breakfast get-togethers. There will be a ladies' luncheon, and possibly an organized tour to a point of interest near Fresno. Outside activities will include mobile-judging and hidden-transmitter hunts on 75, 10, 6, and 2 meters. The Hotel Californian has been chosen as the official headquarters, with 125 rooms reserved for the Convention. The hotel has a large free parking lot, which should please the mobile gang.

OUR COVER

When you receive this issue, Field Day will be just about a month away, and by this time *your* club must have been bitten by the Field Day fever, too. Our gang has been busy making plans for equipment, watch standers, and chow. We've looked over last year's scores (October, 1957, *QST*, p. 60) to refresh our memory on who did what. Our gasoline generator has been checked. Stocks of wrist linament and throat lubricant have been obtained. We're ready!

But, we won't have a Field Day location like the unusual one pictured on the cover of this month's *QST*. Our cover this month shows the Society of Amateur Radio Operators, Inc., of Oakland, Calif. (W6AEX/6), getting set up for the 1957 go. Left to right on top of the Southern Pacific caboose are W6FZC, W6CBX, and W6UHM, while W6ASJ and W6PBX tug at the hand brake (making sure the operation is portable, not mobile), and K6GDO stands (on one foot yet!) looking up at the mast.

COMING A.R.R.L. CONVENTIONS

June 7-8 — Pacific Division, Fresno
 June 14-15 — Rocky Mountain Division, Santa Fe, New Mexico
 July 18-20 — Alaska Territory Convention, Anchorage
 July 26-27 — West Gulf Division, Oklahoma City, Oklahoma
 August 15-17 — ARRL National Convention, Washington, D. C.
 September 20-21 — Dakota Division, Sioux Falls, S. D.
 October 4-5 — Midwest Division, Des Moines, Iowa
 October 10-12 — Southwestern Division, San Diego, Calif.
 October 18 — Ontario Province, Hamilton, Ontario

A.R.R.L. ROCKY MOUNTAIN DIVISION CONVENTION

Santa Fe, New Mexico — June 14-15, 1958

The Santa Fe Amateur Radio Club will be host for the Rocky Mountain Division Convention, June 14-15 — the first ARRL convention to be held in the state of New Mexico in many years.

At convention headquarters, the Desert Inn, you will pick up your program, tickets, information, and be directed to your room reservations. Saturday morning activities will feature a welcoming address, introduction of guests, and a technical address, followed by special interest luncheons for v.h.f., DX, Novice, ladies, s.s.b., etc. The afternoon activities will consist of an ARRL meeting, activities for the ladies, and a mobile hunt and judging contest. The banquet starts at 6:30 p.m., followed by awards, a dance, and finally the Wouff Hong ceremonies at midnight. Sunday morning there will be another mobile hunt and judging contest, followed by a general assembly featuring technical talks and more "eyeball QSOs."

Hotel rates in the Santa Fe area range from \$5.00 single to \$12.00 double and up. Babysitting service will be available for children two years of age and older. Advance registration (by June 1) is \$7.50; thereafter, \$8.50. The pre-convention party is \$2.50; special interest luncheons are \$1.75. Registrations should be sent to: Ruric D. Mason, W5FHL, 1838 Otowi Drive, Santa Fe.

K9IJJ claims that he has been having some very fine QSOs using double sideband and injected carrier.

KN3BIO and KN3BIO both live in Sharon (Massachusetts and Pennsylvania respectively).

Let's Go Microwave

Practical Details of the San Bernardino Microwave Society 3300-Mc. Gear

BY A. D. BREDON,* W6BGK

The story of the activities of the San Bernardino Microwave Society (by W6VIX in December QST) brought in a surprising number of requests for more information on the microwave equipment pictured therein. Here W6BGK, a past president of the Society, supplies full details of the beer-can polaplexer and associated equipment, described in the December QST article.

MICROWAVES — those weird and wonderful little bits of electromagnetic radiation that can be squirted through pipes, offer much to interest the experimenter. In addition, they can provide a greatly needed communication service. In working with microwaves the experimenter will also broaden his own knowledge of electronics, as basic principles are readily observed at these frequencies.

No great degree of skill or knowledge is required to make use of the frequencies involved. Furthermore, one can get on the air with a minimum of expense, if gear available on the surplus market is used. Thus the aim of this article — to attempt to interest more people in microwave communication and experimentation.

* 2256 Canterbury Ave., Pomona, Calif.

Band Limits Changed; Now 3500 to 3700 Mc.

Just before press time FCC announced a change in the band, moving it 200 Mc. higher than the range for which the polaplexer described here was designed. The following changes are required for the new band:

Use two dietetic juice cans ($2\frac{1}{4}$ inches inside diameter) soldered together, with adjacent ends cut out, of course. Dimensions from the closed end of the can thus formed are as given in Fig. 2. To tune above 3550 Mc. the 726A must be modified. Grind off the strut weld and back off the 6-32 nuts one turn to stretch the cavity. Most tubes so treated will tune to 3600 Mc.

Raise the repeller voltage by inserting an OB2 in series with the OA2 regulator tube in the power supply, Fig. 1. The series resistor, R_1 , may have to be lowered in value with this change.

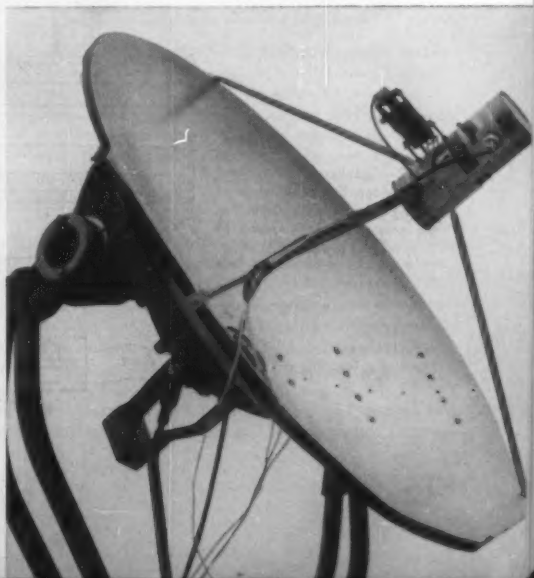
To begin with, let's set up a small microwave station. The circuits and polaplexer described below have been built and used on the air with excellent results. Since 726A klystrons are available on the surplus market at a reasonable price we will choose the 3300- to 3500-megacycle band to start with. Almost all 726A klystrons will tune the complete band, and all should tune at least a good portion of it.

We now require a power source. This can be built from scratch, or an existing supply may be used. Good regulation is desirable and important. VR tube regulation would work, but electronic regulation is preferable for the beam supply. The circuit of Fig. 1 is suggested. Note that the positive side of the 300-volt supply is grounded; therefore, the shell of the klystron will not be at a high potential with respect to ground. If an existing supply with the negative side grounded is used, proper care must be exercised to prevent electric shock. Use a protective can over the klystron and an insulated tuning tool.

Next, we will need an i.f. strip. A 30-Mc. strip of 5 or 6 stages and a band width of around 2 Mc. will be excellent for the beginner. Many surplus radar i.f. units are ideal for this use. It is not absolutely necessary that 30 Mc. be used for the intermediate frequency, but it is a good figure because of the availability of surplus units. In any case, be sure you have a friend build one with the same i.f. or locate an amateur with a microwave setup to allow testing one another's rig.

Having obtained or built a power supply and i.f. strip we have only to build the r.f. components

The beer-can polaplexer, mounted on its parabolic reflector.



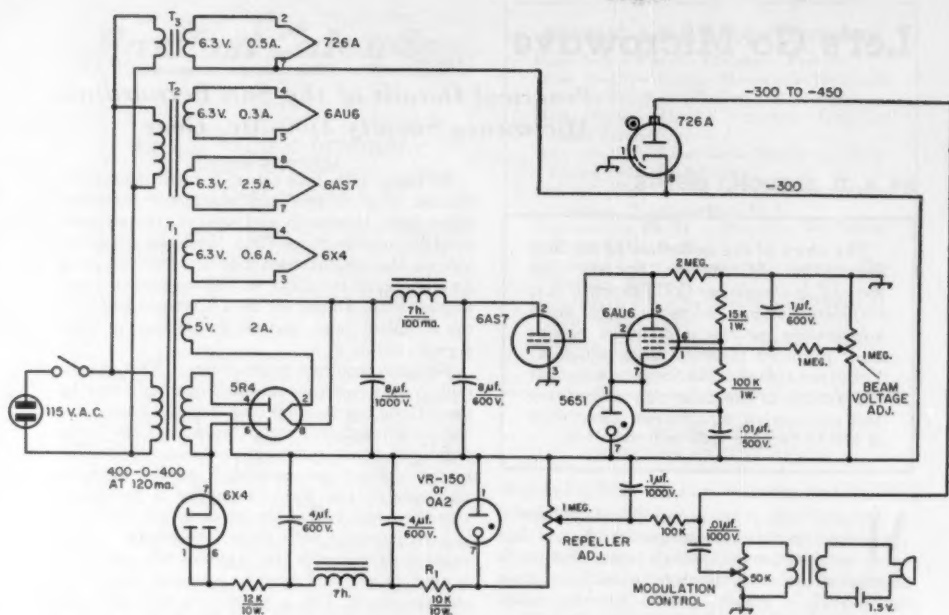


Fig. 1—Schematic diagram of the regulated power supply for use with the 3300-Mc. station. Value of R_1 should be adjusted, if necessary, to give about 15 ma. through the regulator tube. Minimum current values for the various filament transformers are given. T_1 and T_2 can be one transformer, if a suitable combination of secondaries can be found in one unit.

of the system. W6IFE of the San Bernardino Microwave Society, and others, have designed what we call the "polaplexer."¹ The theory of this was suggested by Lawson and Pound.² The

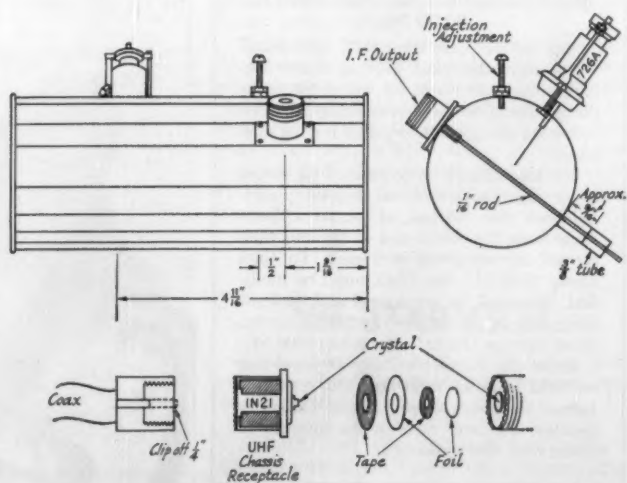
¹ Lawson, *Radiation Laboratory Report 977*, January, 1946. (Cross polarization.)

² Pound, "A Duplex System of Communications for Microwaves," *Proc. IRE*, Vol. 36, p. 840, July, 1948. (Frequency difference duplexing.)

frequency-difference method was used by Merchant and Harrison³ in the first 2-way work ever done by amateurs in the microwave region, and in most amateur microwave communication since. The polaplexer uses frequency-difference duplexing, adding cross polarization to isolate the

³ Merchant and Harrison, "Duplex Phone on 5300 Mc." *QST*, January, 1946, Page 19.

Fig. 2—Details of the beer-can polaplexer. Exploded view of the by-pass capacitor built into the crystal mount is shown at the lower right.



transmitter from the receiver. Figure 2 shows the dimensions and mechanical details of a polaplexer. Many variations are possible.

To make use of this system one station tunes to a given frequency, say, 3333 Mc. The other station then tunes to this frequency plus or minus the intermediate frequency. If an i.f. of 30 Mc. is used, the second station would tune to 3363 or 3303. One klystron then serves as both transmitter and local oscillator. In order to couple sufficient energy from the klystron to the crystal to allow efficient mixing, a local oscillator injection adjustment screw is used. The l.o. injection should be adjusted to provide approximately 0.5 ma. crystal current. Figure 3 shows a typical crystal current metering circuit.

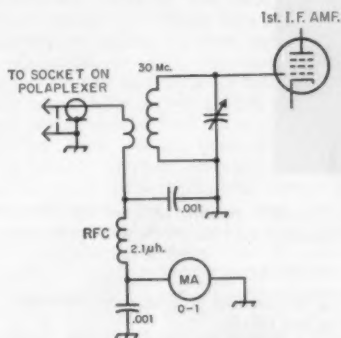


Fig. 3—Circuit for monitoring the polaplexer crystal current.

Polaplexer Details

As described by W6VIX in December *QST*, the San Bernardino Microwave Society polaplexers are made out of beer cans. The probe on the 726A tube is extended by $1\frac{1}{4}$ inches by soldering a stiff wire to the inner conductor of the probe. If the resonator shell is hot, make sure that there is no d.c. contact between the outer conductor and the can.

Perpendicular to the klystron probe we see the mixer probe. This is tuned by means of an adjustable short at the lower right of the end-view drawing. The crystal is mounted in a coaxial fitting, modified as shown in the sketch. The center element of a u.h.f. coaxial fitting is removed, and the hole left thereby is enlarged slightly to pass the body of the crystal. Connection to the small end of the crystal is made with a contact removed from an old tube socket. This is soldered to $\frac{1}{16}$ -inch diameter rod. The movable short at the opposite end of the probe is made by drilling a $\frac{1}{16}$ -inch hole in a piece of brass that is a force fit in the $\frac{3}{4}$ -inch tube. The latter should be sawed lengthwise to within $\frac{1}{4}$ inch of the can, to permit the brass shorting slug to slide inside the tube, but still maintain a fairly tight fit. Position the short at the point that gives maximum crystal current, and then solder both joints. Caution: hold the $\frac{1}{16}$ -inch rod in heavy pliers, between the crystal and the short, to drain off

excess heat and prevent damage to the crystal.

Energy at the intermediate frequency is taken off through a modified male coaxial fitting. The tip of this fitting is cut off about $\frac{1}{4}$ inch, so that it just bears against the foil by-pass capacitor that is built into the fitting on the polaplexer. The capacitor is designed to bypass the energy at the injection frequency, but not that at the intermediate frequency. It is made as follows: cut two disks of Scotch electrical tape, one $\frac{3}{16}$ and one $\frac{1}{16}$ inch in diameter. Cut a hole slightly larger than the pin of the mating plug in the center of both pieces of tape. Cut a hole very slightly larger in the $\frac{3}{16}$ -inch aluminum foil. Now place the smaller aluminum disk on the crystal and center it carefully in the receptacle. Place the smaller disk of tape on this, making certain that no foil is exposed except at the center. Next, place the larger foil, followed by the larger piece of tape, on the assembly. When this is properly done, there will be no contact between the two pieces of foil. The pin of the mating plug bears on the small piece of foil. The larger foil is the grounded side of the capacitor.

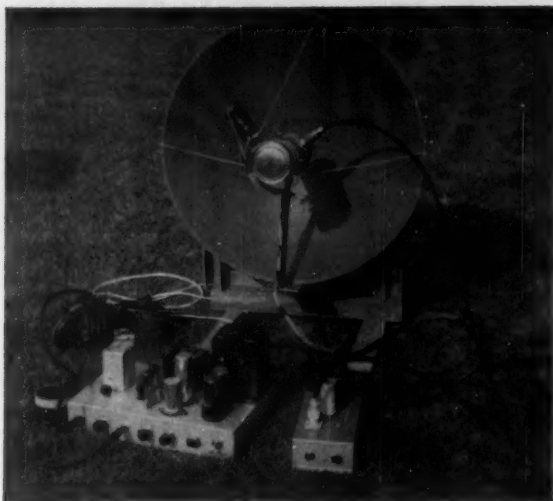
The polaplexer may be used by itself as an antenna for distances up to a few hundred feet. For longer distances a parabolic reflector should be used. The polaplexer then acts as a feed horn for the dish, as shown in the photograph. The polaplexer alone has a beam width of about 60 degrees each side of center. This is ideal for illuminating the parabolic dish. In any case, the polarization of transmission should be rotated 45 degrees to the right looking toward the other station. In this way all stations are identical. The transmitting polarization at Station A will match the receiving polarization of Station B and vice versa.

The distance record for two-way communication on 3300 Mc., 190 miles, was set by W6IFE and W6VIX of the San Bernardino Microwave Society. The equipment at each end consisted of a 48-inch parabolic reflector, polaplexer, 30-Mc. i.f. strip, and power supply similar to that described above.

The Doppler Radar Method

By substituting a fairly high-gain audio amplifier for the 30-Mc. i.f. strip, a low power Doppler radar can be made. With a reasonable-size antenna, 24-inch diameter or larger, moving objects may be detected for a few hundred feet. Whenever the antenna is pointed at a moving object an audio note will result. The frequency of the audio note will be proportional to the speed of the object toward or away from the antenna. Interesting effects may be observed when the antenna is beamed toward an electric fan, a clock, or a fluorescent light.

This Doppler method also provides a good way to adjust the antenna feed (to focus the system). The antenna should be pointed at an electric fan at the greatest distance a tone can be heard (a few hundred feet). Adjust the position of the polaplexer toward or away from the dish to the point of strongest signal. If considerable move-



3300-Mc. rig built by W6OYJ, of the San Bernardino Microwave Society.

ment of the horn is necessary to produce a noticeable change (or if the original distance to the fan is small) move the fan farther away, and repeat. This focusing is extremely important, as a great deal of power can be wasted by having too wide a beam, due to imperfect focusing.

Checking Frequency

Since it is important to know that the klystron is operating within the band, we must have a method of measuring frequency. Cavity wave-meters are preferred but are usually too costly. A good substitute is to use the reflection null method. With the klystron in the polaplexer operating, adjust the l.o. injection to give about 0.5-ma. crystal current. Place it near a vertical metal surface and find the first point *several inches away* at which the crystal current is minimum, mark exactly the position of the mouth of the polaplexer. Move the polaplexer or the reflecting plane away through several null points, counting the maximums, and again mark the position of the mouth of the polaplexer at the last good null

point. Carefully measure between the two marks. The frequency may then be found by the formula

$$f \text{ (Mc.)} = \frac{5905 \times n}{\text{distance (inches)}}$$

n is the number of *maximums* between the two marks.

This is in effect the old Lecher-wire wavemeter without wires. It was shown in use on the cover of *QST* for September, 1948, the frequency in that case being 10,000 Mc.

One of the beauties of the system as described in this article is its versatility. In order to work the other microwave bands it is necessary to change only the polaplexer. The power supply, i.f. strip and parabolic reflector may be used on any band. The only limiting factor is the trueness of the parabolic reflector surface. Most surplus reflectors (if not beat up) are good on all bands up to 10,000 Mc. It is even possible — for the very ambitious only — to make one's own parabolic dish. However, this article is devoted to the simple approach, so we will not attempt to give directions at this time.

Strays

K4LRO is less than 5 feet tall, and so figures that his call stands for Little Radio Operator.

Because of all the interest in various kinds of certificate awards, W8TZO suggests that when we order QSLs we include our *county* as part of the information on the card.

W3EVO isn't sure whether he wants call letter license plates — he already has license plate EE 73 88.

A beginner who had pretty well mastered his 45 r.p.m. code records provided himself with a "new" set at higher speeds merely by playing them at 78 r.p.m. — W8KSL

Welex, Inc., of Fort Worth, Tex., make a unit called a GEN-O-DRIVE which utilizes a stepped pulley arrangement to provide higher generator output at engine idling speeds. The GEN-O-DRIVE disengages when the engine gets above 1000 r.p.m. Their address is P. O. Box 11336.

The Versatile Standing-Wave Ratio Indicator

Become a Bridge Expert in One Easy Lesson

BY BYRON GOODMAN,* WIDX

JUDGING by some of the letters received at Headquarters and by remarks heard over the air, not everyone who owns a standing-wave indicator knows the several different jobs it can do around the shack. If there weren't a strict taboo against it, this article would have been called "Getting the Most Out of the S.W.R. Indicator." (There aren't any editorial objections to getting the most out of anything; the objections are to the overworked cliché.)

To make sure that we're all talking about the same thing, let's review a little. Back in the days before coaxial feed lines were available, very few hams worried about the "standing-wave ratios" on their open-wire lines. A few studious types knew that such things existed on transmission lines, and a very few (non-operator types probably) could even make primitive approximations of the s.w.r. if their hands were forced. These primitive measurements consisted of trotting up and down the transmission line with a suitable indicator and finding the values of maximum and minimum voltage (or current). The ratio of the maximum voltage to the minimum voltage was called the "standing-wave ratio," and the hot shots called it the "v.s.w.r.," for "voltage standing-wave ratio." The resultant number turned out to be the same as the ratio of maximum current to minimum current. It meant very little to anybody but engineers.

When WW II came along it brought, among other things, the rapid development of microwaves and waveguide and solid-dielectric coaxial-line techniques. One thing you don't do on microwaves is to get yourself mixed up with high standing-wave ratios, because the losses mount up and components like magnetrons and such don't remain on their best behavior. First efforts at measuring the s.w.r. in waveguides and coaxial lines involved the old trotting-up-and-down-the-line technique (using probes and slotted lines) and, frankly, it was very slow and a pain in the notebook. The slotted line is useful for measuring some other things but if all you want is a number called the "s.w.r." then something direct reading is more desirable.

The direct-reading instrument showed up after a while, in the form of a device called the "directional coupler." The standing waves on a line are formed when all of the energy isn't absorbed at the load; some of it is reflected back and, with the later energy headed for the load, sets up the standing-wave pattern of maximum and minimum voltage (and current) points along

the line. (The mechanics of all this is explained in many books, if you care to dig into it.) The directional coupler makes it possible to measure independently the energy in a line going from the generator to the load and also that reflected from the load back toward the generator. A high s.w.r. occurs when much of the energy is reflected, a lower s.w.r. is obtained when little energy is reflected, and the s.w.r. = 1:1 when no energy is reflected.

The value of the directional coupler should be obvious. If for some reason we want to know the s.w.r. in a line, we don't have to trot up and down it (which gets to be difficult in most practical antenna installations); we can make our observations at the transmitter end of the line. With more and more solid-dielectric coaxial line in use by amateurs, the directional coupler was a real boon. First one to appear was the Micromatch,¹ followed by the Twin-Lamp² and then the Monimatch³ with its several versions. There is an allied device called the "s.w.r. bridge" that will measure the s.w.r.,⁴ but it cannot be left in the line at all times the way the other devices can. It does, however, have an excellent place in the scheme of things.⁵

Why Know the S.W.R.?

But what good are these devices? Smart hams could always tell when they had power going out the feed line; they used r.f. meters (thermocouple or hot-wire type, depending on the era) when they were in the chips, and they used flashlight

¹ Jones and Sontheimer, "The 'Micromatch,'" *QST*, April, July, 1947.

² Wright, "The 'Twin-Lamp,'" *QST*, Oct., 1947.

³ McCoy, "The Monimatch," *QST*, Oct., 1956; *QST*, Feb., 1957.

⁴ Pattison, Morris, Smith, "S.W.R. Meter for Coaxial Lines," *QST*, July, 1947.

⁵ Corderman, "A Composite Test Set," *QST*, Dec., 1955.

The s.w.r. indicator is a magical little instrument that is taken for granted nowadays, although slightly more than a decade ago you would have been burned at the stake (or at least roasted on the podium) for even suggesting that such a thing was feasible. Commonplace as it is today, however, the sad fact is that many owners don't know how to use s.w.r. information except in the most elementary ways. Read this article and you will see what we mean.

* Assistant Technical Editor, *QST*.

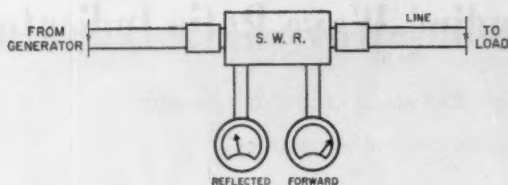


Fig. 1—Standing-wave indicators exist in several different forms and are identified by as many different names. The directional couplers discussed in this article all have three points in common. They are used in the line, they can handle the full transmitter power, and they measure the s.w.r. by comparing the Forward and Reflected powers.

bulbs or neon lamps when the groceries came first. But, you say, these modern transmitters with low-impedance output have to work into a line that has a low s.w.r. (Not necessarily so, but it's a popular misconception.) Phooey! Low-impedance output has been used for many years (ever hear of "link coupling"?), and we have been able to load transmitters, and properly, too. Suppose you have a Monimatch and a coax-fed dipole, and the indicated s.w.r. is 2.2; what do you do about it? (You tune up in the usual fashion, say you have "a fairly low s.w.r." and continue to operate, that's what you do!)

What we're driving at here is simply this: Many of the owners of s.w.r. indicators are merely using them as expensive output indicators and conversation pieces. They aren't beginning to make use of the capabilities of the instruments.

What the S.W.R. Indicator Can Do

The Micromatches and Monimatches consist of (1) an instrument that you connect in the line, (2) a two-position switch and (3) a meter. The switch points are labeled "Forward" and "Reflected," meaning that in the Forward position the meter reading is proportional to the power going toward the load, and in the Reflected position the meter reading is proportional to the power reflected (not absorbed) by the load. Whenever any reflected power is indicated it means that some of the power present is "reactive" or "apparent"; this may foul up your thinking and confuse your arithmetic if you aren't familiar with real vs. apparent power, or

power factor, but don't let it throw you; the reflected power isn't dissipated in your transmitter, and all it ever does is run up your line losses some.⁶

Sometimes the meters are calibrated in watts, but more often you merely use the relative readings. The meter can be calibrated to indicate the s.w.r., because the s.w.r. can be found from a comparison of the Forward and Reflected readings. A ham with two meters could dispense with the switch and use a dual indicator like that pictured in Fig. 1. Don't let those fancy titles like "generator" and "load" scare you off; these are merely to show that the power source is at the left and the thing you're delivering the power to is at the right. The "generator" is usually your transmitter but it could be a driver stage or a signal generator; the "load" is usually the antenna but it could be the input circuit of a driven amplifier or a dummy load. Any of the power-handling instruments (Micromatch, reflectometer, Monimatch) have a negligible effect on the s.w.r. in the line to the left, but this isn't necessarily true of the resistive s.w.r. bridge referred to earlier.

In this enlightened age practically everyone knows what the meter readings will be when the load has a resistance equal to the impedance of the line. (The "impedance" of the line is determined by the physical and electrical characteristics of the line; you know RG-8/U to be 52-ohm line, RG-11/U to be 75-ohm line, and so on.) If the line is RG-8/U or some other 52-ohm line and the load is 52 ohms, when we turn on

⁶ Goodman, "Losses in Feed Lines," QST, Dec. 1956.

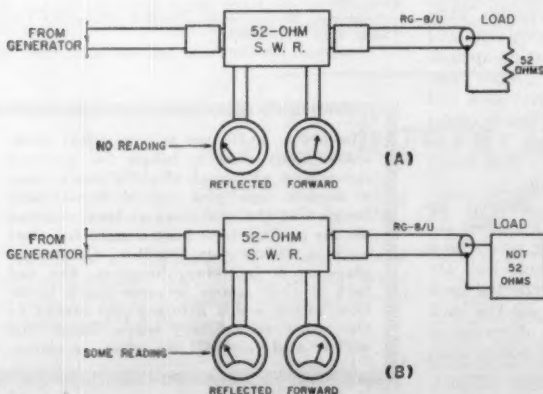


Fig. 2—(A) When the line is terminated in a load equal to the impedance of the line, the Reflected power is zero and the s.w.r. is 1:1. (B) Any other termination will result in some Reflected power.

the generator the Forward meter will show something but the Reflected one will show nothing, as in Fig. 2A. The directional coupler is labeled "52-ohm S.W.R." to remind you that if it were designed for another line-impedance value we wouldn't get the same results (the Reflected meter wouldn't read 0).

This case with the load equal to the line impedance is of course a familiar thing to anyone who has used an s.w.r. indicator. The load doesn't have to have an ohmic resistor as shown in Fig. 2A; it can be, and more often is, the radiation (plus ohmic) resistance of an antenna. A standing-wave ratio of 1:1 means that there is zero reflected power, and the losses in the line are a minimum when the reflected power is zero. The length of the line should have no effect on the s.w.r.; the s.w.r. is determined solely by the relationship between the line impedance and the load.

When the load is anything other than a resistance equal to the line impedance, some reflected power will be indicated, as represented in Fig. 2B.

Using the Directional Coupler

Getting down to cases, here are some of the ways you can use the directional coupler:

1) To indicate resonance and proper coupling in the transmitter when no antenna coupler is used.

The way many hams use the things, by tuning the output amplifier for the highest indication of Forward power without burning up the transmitter. Manufacturers of s.w.r. indicators certainly don't object to this application, but a less-expensive indicator will serve just as well.

2) In the line between transmitter and antenna coupler.

Permits adjusting the antenna coupler to give an s.w.r. of 1:1 in the line between transmitter and coupler, desirable with pi-network output and when a low-pass filter is used. The low s.w.r. also minimizes losses in this length of line, although this is usually of minor importance in what is normally a short length. Remember that

your adjustments do not affect the s.w.r. in the line between coupler and antenna. However, you can use the s.w.r. indicator in the line between coupler and transmitter to measure the s.w.r. on the line between coupler and antenna.⁷

3) To adjust coupling at input circuit of final amplifier, when amplifier is coupled to driver through coaxial line.

When this is done with driver and amplifier running at normal power, the resultant coupling condition for a midband s.w.r. of 1:1 on the short coupling line also gives the best band width, which means you don't have to retune as often when changing frequency within a band.

4) To adjust matching section between antenna and line.

One of the very useful applications. The adjustment of a gamma match is a cinch with an s.w.r. indicator, and sheer guesswork without. With the antenna resonant (formula length) merely vary the gamma until a 1:1 or very low s.w.r. is indicated. The gamma match with an adjustable capacitor is the most convenient to use. If you can climb the tower you can use the s.w.r. indicator up at the antenna; if you have a light mast or tilt-over job that won't support you, rig up a string drive to adjust the capacitor with the antenna up in the air. The length of line usually isn't very important below 30 Mc., but above 50 Mc. the s.w.r. indicator is best used no more than a few wavelengths from the antenna. When the losses in the line begin to mount up, as they will in long lines at v.h.f., you will get indications of a match at the transmitter end of the line that aren't true at the antenna end. The extent of this effect is shown in Fig. 3. We've seen a coil of cable a few hundred feet long used as a dummy load for a v.h.f. transmitter; it made very little difference in the s.w.r. if the line was terminated or not.

5) To check antenna resonance.

Another of the more useful applications. If an antenna is used as the termination for a line, the frequency of minimum (not necessarily 1:1)

⁷ Grammer, "Universal S.W.R. Measurements With a Coaxial Bridge," *QST*, Dec., 1950.

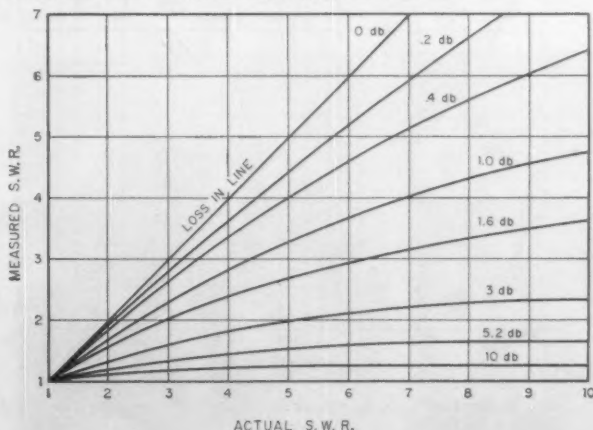


Fig. 3—Indicated s.w.r. as a function of true s.w.r. This clearly demonstrates the need for measuring the s.w.r. near the load when making matching adjustments at an antenna, if a long (lossy) line is used. (From an article by John Lory, courtesy of *Electronics* magazine, a McGraw-Hill publication.)

s.w.r. is the frequency at which the antenna is a pure resistance (no reactance), and this is the resonant frequency of the antenna. Thus to find the resonant frequency of an antenna fed directly by coaxial line, it is only necessary to vary the frequency of the transmitter until the frequency of minimum s.w.r. is found. (Don't just look for minimum Reflected power; you have to make sure that the Forward power is still there, and this will probably require a few coupling adjustments at the transmitter as you run over the band.) If the minimum s.w.r. occurs at the high-frequency end of the band and you prefer to be peaked at a lower frequency, lengthen the antenna. If the minimum s.w.r. occurs at the low-frequency end and you have your heart set on the high, make with the cutters. You might be tuning a dipole made of No. 12 wire, or one of the new XTC4U specials (the one made from 14 beer cans and a piece of wet string); you can still use the technique. Just remember to make the resonance check with no matching section between the antenna and the line⁸, and be sure you find the minimum s.w.r. and not just the minimum Reflected power with some fixed transmitter coupling.

The above is based on the fact that near resonance the radiation resistance of an antenna changes slowly. Considering it to remain constant about the resonant frequency, any reactance added to the resistance will increase the s.w.r. when this antenna is used as a load for a line.

If you have any curiosity about your antenna, you can even get a fair idea of what the antenna impedance is, just by measuring the s.w.r. at resonance and then making an educated guess.

⁸ The line should be connected in the center of a half-wave antenna or in a current loop (point of maximum current) in a long wire.

For example, suppose the s.w.r. turns out to be 1.6 at the resonant frequency, and you are using 52-ohm line. You know that the antenna impedance must be either 83.2 ohms (52×1.6) or 32.5 ohms ($52 \div 1.6$), from the relation

$$Z_0 = R_1 (s.w.r.) = R_2 \div (s.w.r.)$$

where

Z_0 = Line impedance

R_1 = Resistive termination smaller than Z_0

R_2 = Resistive termination larger than Z_0

Your educated guess would probably be the 32.5 ohms, in the case of a multielement beam.

If your meter reads Forward and Reflected power, the s.w.r. can be determined by the use of Fig. 4.

Effect of Harmonics

There may be occasions when the Reflected reading will run higher than the Forward. This doesn't necessarily mean that the unit has gone haywire; in most cases it will be an indication of a serious u.h.f. or v.h.f. parasitic oscillation in the transmitter. In the case of a c.w. transmitter, the Reflected reading may jump up to a high value as the key is closed and then drop down to a more normal value; this means that there is a momentary v.h.f. or u.h.f. parasitic oscillation as the key is closed.

When you are getting down to very low readings of reflected power, you have to avoid any appreciable spurious content in the transmitter if the load you are adjusting is frequency sensitive. In other words, if you are adjusting something that tunes, like a gamma match or an antenna coupler, it will give a proper termination for the line at only one relatively narrow band of frequencies. You will tune and tune and never get the s.w.r. down to 1:1 if there are a few watts

(Continued on page 166)

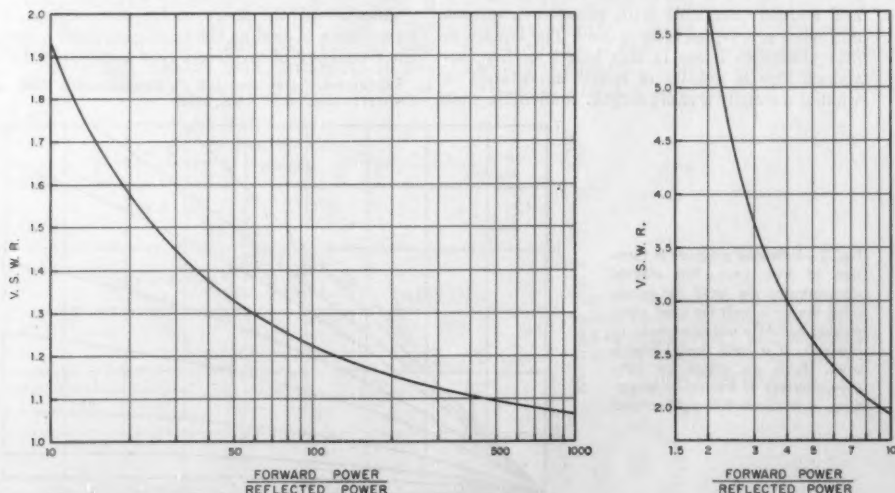


Fig. 4—Graph of s.w.r. vs. ratio of Forward to Reflected power. Use the chart on the right for low power ratios.

AS LONG AS you remain in the Novice Class your transmitter must be crystal controlled. This, of course, means that you're restricted to the frequency or frequencies for which you have crystals. The FCC wants it that way.

But you do have a reasonably wide range of choice: within the assigned frequency range of the Novice bands, you may pick any frequency that appeals to you. Having done so, the chances are that after a short time you will wish you had picked some *other* crystal frequency — or that you could change the frequency of the crystal you now have — because every other Novice seems to have chosen the same spot to operate. Or perhaps you've seen surplus crystals advertised at bargain prices, but unfortunately not in the Novice bands, and could give yourself quite an assortment of frequencies if only you knew how to "move" crystals to spots where you're authorized to operate.

Whatever the reason, changing the frequency of a crystal has its useful aspects, especially for the Novice. It's not hard to do, actually, but it has to be done the *right* way or you may wind up by having no crystal at all. The purpose of this article is to show how it can be done safely. First, though, a little background about crystals in general.

What Crystals Are

Crystals used for transmitter frequency control are mechanical resonators, something like a tuning fork or a bell, but with one very important difference — while the crystal is vibrating mechanically it is also generating an electrical voltage of the same frequency as the mechanical vibration. This "piezoelectric effect" is characteristic of only a few substances found in nature, the most important one for our purposes being quartz. Also, unlike the tuning fork or bell, the frequencies of vibration are far beyond audibility — running, as we know, into millions of cycles per second.

Such an oscillating crystal is actually a thin slab or plate cut from the natural quartz. In the crystals that are used for amateur-band trans-

Crystals Where You Want Them

Grinding Techniques for the Novice

BY LEWIS G. McCOY,* WHICP

Do you, Mr. Novice, have all the transmitting frequencies you want? And do you find that crystals you have, or can get cheaply, are on the wrong frequencies? If so, you'll be interested in knowing how to move a crystal where you want it. It's not hard, and it's an interesting pastime in itself

mitter frequency control the dimension that controls the frequency of oscillation is the thickness of the plate; the thinner it is, the higher the frequency. The plate has to be cut from the "raw" crystal in just the right way (with respect to certain "axes" of the crystal) in order to oscillate at all, and the two sides of the wafer must be flat and parallel within extremely small tolerances.

Originally, oscillating plates were cut from the raw crystal along what are known as the "X"

* Technical Assistant, CST.

A setup for grinding crystals using the waterproof abrasive paper method. Note the quick-change adapter clip for putting the holder together. This is made from a piece of metal — aluminum, tin or copper — strong enough to hold its shape. The size of the adapter will depend on the size and shape of the holder.



and "Y" axes, and these early crystals were known as "X-cut" or "Y-cut" depending on which axis was used. Both these cuts were somewhat temperature sensitive — that is, the frequency of oscillation was subject to change as the temperature of the crystal varied. Later, several other cuts less subject to frequency-temperature effects were discovered. The ones of most interest to us are the "AT" and "BT" cuts, since these are the ones commonly used for transmitter control in the medium- and high-frequency range. Of the two, the AT-cut is the more active piezoelectrically but is much thinner for the same frequency than the BT-cut. Above about 5 Mc. an AT-cut becomes so thin that its use is rather impractical because it is easily fractured, so the BT-cut is generally used for frequencies higher than this.

A crystal plate cut from the raw crystal must be "finished" by grinding it so its sides are flat and parallel and the thickness is exactly right to produce the desired frequency. In commercial crystal manufacturing, the initial work is done by machine grinding and then the crystals are brought to the final frequency by a chemical process called "etching." However, very good results can be obtained by hand grinding, especially when the problem is simply to change the frequency of an already-finished crystal.

The crystals most commonly used in amateur stations today are those designed to fit the FT-243 type holder shown in the photograph. The crystal ordinarily measures about $\frac{1}{2}$ " x $\frac{5}{8}$ ", with the thickness depending on the frequency. If you have access to a micrometer you'll find on measuring the crystal that the surfaces are very nearly parallel, although the thickness at the corners and edges may be slightly less than at the center — by as much as a few ten-thousandths of an inch. This thickness variation, called "contouring," is a factor in obtaining maximum activity in a crystal.

If we grind away some of the quartz and make the crystal thinner, it will oscillate on a higher frequency. With a little experience, it is possible to move a crystal several hundred kilocycles. In essence, crystal grinding consists of rubbing the crystal back and forth over a flat surface that has been covered with grinding compound. Before we discuss the actual process of crystal grinding let's see what is needed in the way of materials.

Grinding Materials

All the materials needed for the job can be purchased or ordered at your local hardware store. There are two suitable methods of home grinding, and the one you choose will determine what materials are needed.

First, with either method you'll need a perfectly flat surface for the grinding operation. A piece of plate glass about 12 inches square makes an ideal surface. One of the two methods to be discussed makes use of a grinding compound such as carborundum powder and the other utilizes waterproof abrasive paper. If you decide to use compound you'll need a few ounces of No. 220

grit and a like amount of No. 400. Grinding compound is graded by number; the lower the number the coarser the grit.

The waterproof abrasive paper is available in several different grades of grit.¹ One sheet each of Nos. 400 and 220 will be satisfactory for most grinding jobs. If you decide to use the paper you'll also need a small amount of rubber cement; this is used to attach the abrasive paper to the plate glass and affords a simple system for changing papers.

Holder Adapter

Since it is necessary to keep a continual check on the frequency of the crystal as it is being ground down to its final frequency, much time can be saved by making a "quick-change" holder adapter. This is merely a piece of metal bent in the form of a clip, as shown in the photograph. It eliminates the job of fastening the cover of the holder in place each time a crystal is checked.

The only other items needed are your receiver and transmitter.

Grinding the Crystal

Let's take a "for instance" to demonstrate how a crystal is ground. Suppose some generous ham has made you a present of a 3720-ke. "rock." Obviously, you cannot use the crystal until you move it into the Novice band. This means that the crystal frequency must be raised more than 30 kc.

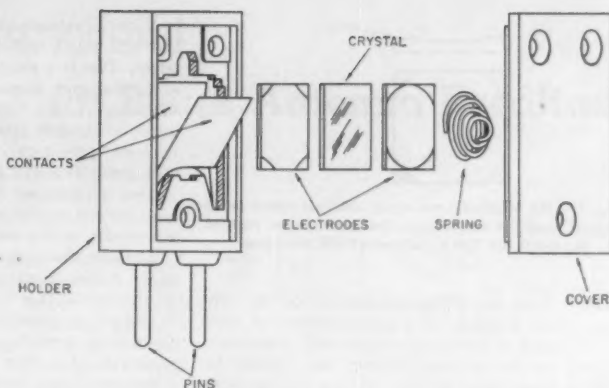
Some method of checking the crystal frequency after each grinding operation will be needed, and your receiver can be used for this purpose. Let the receiver warm up so that it is not subject to drift, and after it has settled down, plug the 3720-ke. crystal into your transmitter and turn on the oscillator. (If the transmitter is one in which the oscillator cannot operate unless the entire rig is on, use a dummy antenna. You don't want to be radiating a signal on the air when checking your crystal! Also, you have to have some method of knowing where the edges of the Novice band are, obviously² — this is something you ought to have, anyway. We won't go into that subject in this article, but will assume that you do have some way of telling whether a signal you hear on your receiver is in or out of the Novice band.)

Tune in the signal from the oscillator and ad-

¹ Waterproof abrasive paper is made by several companies and the writer was able to obtain three different brands from a local hardware dealer. These brands were: Jewelite Waterproof Paper, Abrasive Products, Inc., South Braintree, Mass.; Wetordry Tri-M-Ite Paper, Minnesota Mining & Mfg. Co., St. Paul, Minn.; Waterproof Carborundum Paper, The Carborundum Co., Niagara Falls, N. Y.

² The best thing for this purpose is a crystal-controlled frequency standard. A simple 100-ke. crystal oscillator such as the circuit shown in the chapter on measurements in the *Handbook* can be used. Checks at 50-ke. intervals can be made with 100-ke. markers by listening to the second harmonic of the frequency being checked. For example, if the crystal in the transmitter is oscillating on 3752 kc. its second harmonic, 7504 kc., will be heard just above the 7500-ke. marker from the 100-ke. oscillator. When listening on the second harmonic, dividing the measured frequency by 2 gives the actual frequency.

Fig. 1 — The different parts that make up the crystal holder. The crystal is held in place by the electrodes and these three items are placed between the contacts in the holder. As pointed out in the text, it is important to be careful when disassembling the unit because the spring is under tension when held down by the lid.



just the receiver gain to give a moderately strong signal. Don't let the receiver be overloaded, because if you do you won't be able to tell accurately enough just where the signal is.

Set the piece of plate glass on a table or other convenient working surface. Also at the working area you'll need the No. 400 grinding compound, a container of clean water, and some facial tissues or a soft, lintless cloth.

Remove the crystal from the transmitter (be sure to turn off the oscillator plate voltage or open the key) and remove the screws holding the lid of the crystal holder. Be careful, because there is a coil spring under compression just below the lid, and the whole works is likely to pop out of your hand — with the result that you may have to hunt for holder parts on the floor. Fig. 1 shows the component parts of the crystal holder in the order in which they come apart. Remove the holder lid and spring. (In some holders there is also a fiber spacer below the spring. This, too, should be removed.) The next part of the assembly is a flat contact that connects to one of the crystal socket pins. Lift this contact and under it you'll find the two electrodes with the crystal between them. Remove these three items from the holder. Note that the electrodes have raised metal portions or "lands" on each corner on one side. When the crystal is mounted in the holder it is clamped by these lands, leaving a small air space between the crystal and the major part of the electrode surfaces.

You are now ready to start grinding. The crystal is quite brittle and won't stand rough treatment, so handle it carefully. Put a pencil mark on one surface of the crystal and do all your grinding on the *other* side; this makes sure that at least one surface of the crystal will stay flat and "on-axis" and will serve as a reference if anything goes wrong during the grinding. Put a few pinches of No. 400 carborundum compound on the glass surface and add enough water to make a mixture the consistency of thick cream. Spread the mixture over an area about eight inches square. Lay the unmarked side of the crystal on the glass and place the tips of the index

and middle fingers on opposite corners of the crystal. Use just enough pressure to move the crystal across the grinding compound in a "figure-8 pattern. Make about five "8s," and then switch your finger tips to the other two corners and make five more. This should be enough grinding for the first pass.

Wash the crystal and wipe it dry, being careful to remove all traces of grinding compound. Check to make sure the pencil mark is still clear so you know which side is being ground. Place the crystal between the holder electrodes, making sure the raised lands are touching the corners. Put the electrodes and crystal back in the holder between the contacts and place the spring and cover in place. Use the quick-change adapter to hold the unit together. (Actually, all this can be done much more quickly than it takes to tell about it.)

Put the crystal in the rig and turn on the oscillator. You'll probably find that you have only moved the frequency enough to cause a noticeable change in the beat note from the receiver. However, take heart; you have actually changed the crystal frequency! You now know the process, and you can go through the steps again, this time making more figure "8s" to change the frequency a greater amount at one time. Keep track of the number of "8s" so you will know how many it takes to move a given number of kilocycles. This is important if you're shooting for an exact frequency, since you will want to slow down the grinding process as you approach the frequency you want. There's no replacing ground-off quartz once you've overshot the mark!

Only the fine grinding compound was used in this example. For moving a relatively small number of kilocycles — say, up to 50 or so — it is better to use the fine compound and take it in easy stages. The coarser grade should be used only when you have to take off quite a bit of quartz to get near the frequency you want. Even then, you should shift to the fine grade when you get within 20 or 30 kc. of the desired final frequency.

Either grade will lose some of its cutting power

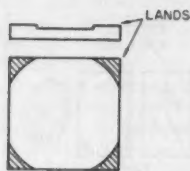


Fig. 2 — The electrodes are made with four raised areas called "lands" at each corner. The lands are the parts of the electrodes that make contact with the crystal.

after a little use. When the number of "8s" required for grinding off a given number of kilocycles tends to become excessive, add more compound to the mixture. Water, too, should be added from time to time to keep the mixture free-flowing. Also, keep rotating your "8s" as you work; this will grind the glass plate evenly and thereby prevent wearing grooves in it that will destroy its flatness.

The Abrasive Paper Method

To use the abrasive paper method mentioned earlier, you merely cement the proper grade of paper to the glass, moisten the grinding area and grind the crystal. The paper gives you uniform distribution of the abrasive. After acquiring a little experience, you'll discover that the paper method offers some advantages over the loose-compound type of grinding. When you grind over the same portion of the paper several times that area wears down and the frequency change per "figure 8" becomes smaller. You can then move to another area of the paper if you want to grind at the same speed, but still have at hand a fine-grinding area where you are able to close in slowly on your target frequency.

Keep the paper well moistened. The water keeps the crystal cool and also acts as a lubricant to prevent sticking, which could result in cracking or chipping the edges of the crystal.

As in the case of using grinding compound, the coarser paper should be used for moving the frequency rapidly through a large number of kilocycles and the finer grade for finishing off to frequency when the crystal has been brought to within 20 or 30 kc. of the final figure.

If Activity Drops

Sometimes (and this always seems to occur during the last grinding operation!) the crystal stops oscillating. If you've followed instructions so far you needn't be alarmed; lack of activity at this stage doesn't mean the crystal is ruined. Any one of several things can cause a crystal to stop oscillating. The first thing to do is to make sure the crystal and electrodes are perfectly clean. Dirt on the crystal or electrodes can lower the activity (so the crystal only oscillates weakly) or prevent it from oscillating at all.

Check to make sure that the crystal is mounted properly between the raised lands of the electrodes. It is easy to make a mistake when putting the crystal in the "sandwich."

If the crystal is clean and properly mounted but still won't oscillate, try bevel grinding the edges. This is a simple process: hold the crystal at a 45-degree angle on the grinding area and make one or two "figure 8s" on each of the four edges. If the first attempt doesn't bring the crystal back, give it two or three more trials. If this still doesn't work, it is probable that you've ground the sides out of parallel, or perhaps have a high (or excessively low) corner. A micrometer is a necessity at this point.

Measure the crystal thickness at several points to see if there is any variation. If you find a spot on the crystal that is thicker than the rest, mark it and try to grind it to the same dimensions as the rest of crystal — grinding, of course, on the same side as in your previous operations.

As mentioned earlier, the corners should be one to three ten-thousandths of an inch thinner than the center. A corner that is thicker than the main body of the crystal almost always will prevent the crystal from oscillating, so make sure that every corner is "down" just a bit as compared with the thickness at the center of the crystal.

If you've only started out to move the crystal frequency 20 or 30 kc. you shouldn't have to worry about these finer points in "contouring." Just try to keep light and even pressure on the crystal in making your "8s." Never put pressure on the center of the crystal during grinding; you may wind up with a concave plate that won't become active until it is reground with the aid of the micrometer.

Lowering Frequency

It is obvious that grinding a crystal always raises the frequency, since material once taken off cannot be restored. Nevertheless, it is possible to make a crystal operate at a slightly lower frequency than it normally has, by loading it mechanically so that it literally slows down. Although this hasn't any direct connection with grinding crystals, it is of some interest in case the grinding process is carried just a bit too far. However, the frequency usually can't be lowered more than a few kilocycles without a substantial loss of activity.

The method of loading generally used consists of rubbing cold soft solder on each side of the crystal. Mark a circle about one-quarter inch in diameter centered on each side and use the circles as guides when applying the solder. The solder should be applied to both sides in equal amounts, and frequent checks should be made to be sure the crystal keeps oscillating.

Another material that has been used with some success for loading crystals is India ink. The same procedure should be followed in using it.

Finally —

Not every crystal you may happen to lay your hands on can be shifted in frequency by the method described above. If the crystal has plated-on electrodes, don't try to grind it. Surplus

(Continued on page 168)

Simple Rotary Joint for Beam Antenna Feedlines

BY THOMAS F. SNYDER,* K6PGB/4

OF POSSIBLE interest to many constructors of beam antennas is a coaxial-type rotating joint made with Amphenol type C connectors. This coaxial feedline connection permits continuous rotation and will handle power equal to that permitted by the rating of RG-8/U cable. Connectors used are the types UG-570/U and UG-573A/U, otherwise identified by Amphenol catalog numbers 82-502 and 82-530, respectively. Each is a weatherproofed, 50-ohm, constant-impedance unit of bayonet-lock design.

A method of rigging the assembly to a rotary beam is shown in Fig. 1. Notice that the rotating portion of the beam mast must be accessible below the rotor mechanism, and that the lower end of this mast is equipped with a cap which supports the type UG-570/U bulkhead jack. Coaxial cable for the connection between the jack and the gamma-match—or what have you—is fed up through the rotatable mast.

The main feedline is terminated at the rotator end with a type UG-573A/U plug. The coaxial cable should be clamped to the fixed mast an inch or so below the plug. Allow reasonable alignment between the cable, the plug and the bulkhead jack.

* Cocoa Beach, Fla.

Editor's Note: W18X, a manufacturers' representative with an intimate knowledge of coaxial cable connectors, adds the following to K6PGB's useful information:

If the coupling ring on the UG-573A/U plug should fail to turn freely, as might happen after considerable weather exposure, the connectors would separate on rotation in one direction. The builder could protect against this problem by lubricating the plug coupling ring at the rear after assembling the plug to the cable. The coupling ring plays no part in the electrical circuit. Be very careful to keep oil or

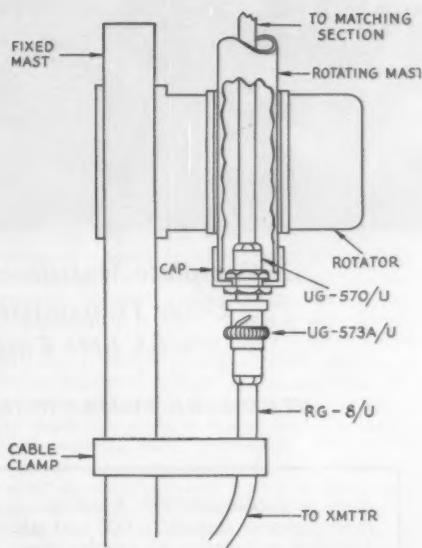
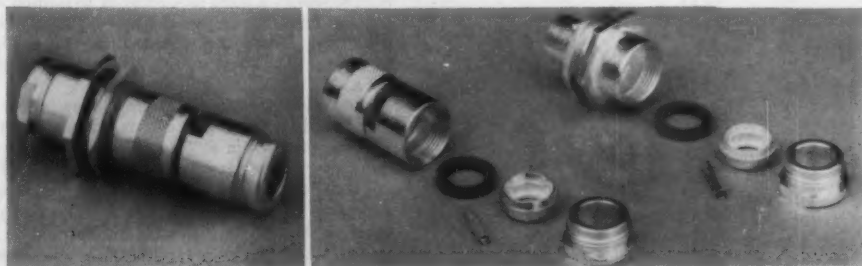


Fig. 1 — Drawing of the rotary joint made with coaxial connectors.

other lubricant out of the inside surfaces of the connector pair.

Amateurs interested in using the system described above should appreciate that type C connectors are not designed for this particular application. There is therefore no extensive experience to draw upon to indicate whether or not the connectors will stand up indefinitely.



A completely assembled set of Amphenol type C connectors is shown at the left. Individual components of the type UG-570/U bulkhead jack and the type UG-573A/U mating plug are shown in the photograph to the right.

A Side-Band Package



A Complete Multiband Filter Transmitter with 6146 Final

BY GEORGE K. BIGLER,* W6TEU

Here is a complete side-band transmitter, power supply, VOX and all. Utilizing a number of surplus components, it shouldn't be too expensive to duplicate. The means for selecting the side band is novel and ingenious.

WHEN CONSTRUCTION of this exciter was started, it was hoped it would have a few features that previously described units lacked. Some of the features which appeared desirable, after several smaller rigs had been built, were:

1. Bandswitching, all-band c.w.-a.m.-s.s.b. operation
2. Side-band selection without carrier shift
3. Voice control with a loudspeaker
4. Peak limiter
5. Ample driving power for a kilowatt final
6. Good frequency calibration
7. Complete self-contained unit

All of these features are included in the exciter to be described, which has been in operation for about six months with excellent results. It is felt after this period of on-the-air tests that the unit is well worth the construction time required.

Construction and alignment should not be very difficult or time consuming for a ham with a reasonable amount of construction experience.

* 4290 Beulah Drive, La Canada, Calif.

Circuit Description

Referring to the block diagram in Fig. 1, a crystal oscillator, V_{1A} , is used to feed a cathode follower, V_{1B} , which drives the diode balanced modulator for carrier suppression. The double-side-band signal is fed through the two-section crystal filter, where the lower side band is rejected. The remaining upper side band is amplified by V_2 and fed to the mixer, V_3 . The unmodulated 450-ke. carrier signal from the cathode follower is also fed to the grid of the frequency doubler, V_{4A} , doubled to 900 ke. and fed to V_{4B} . V_{4B} is used as either a doubler to 1.8 Mc. or as a tripler to 2.7 Mc., depending on the position of the sideband selector switch. Thus the output of V_{4B} is either four or six times the crystal oscillator frequency. When the fourth harmonic from V_{4B} is mixed with the side-band signal in V_3 , the frequency sum can be taken at the output of the mixer to give an upper side-band signal at five times the crystal oscillator frequency. When the sixth harmonic is mixed with the side-band signal, the frequency difference can be taken to give the same resultant output frequency with the opposite side band.

The output of the side-band generator chassis is therefore at a fixed frequency of five times the original frequency, but with side-band selection available. This same principle can be applied to a fixed oscillator, as the b.f.o. in a receiver, for a selectable-side-band system.

The side-band signal at approximately 2.25 Mc. is fed to V_{10A} , where it is mixed with the v.f.o. running from 5.25 to 6.25 Mc., to give a frequency difference output from 3.0 to 4.0 Mc.

To deliver a clean signal to the final mixer, a double tuned circuit is used, which is gang tuned with the v.f.o. The final mixer is used to convert the 3.0- to 4.0-Mc. signal to the desired band. By choosing the crystals for final conversion so that 3.0 Mc. goes to the low even megacycle end of each band, a single dial calibration from 0 to 1.0 Mc. can be used on all bands. It is only necessary to mentally add the mega-

cycles of the band in use to the dial reading to get the frequency of operation. By putting the conversion oscillator on the low side in each case, side-band reversal is eliminated. Harmonics of the 3.0- to 4.0-Mc. signal in the higher bands will fall outside the pass band where they are easily suppressed in the tuned circuits. On 10 meters, the band is divided into two sections 28.0 to 29.0 and 29.0 to 30.0 Mc.

After final conversion the signal is amplified by V_{105} and V_{106} to about 30 watts peak output. Some of the r.f. output from the final stage is fed to the peak limiter V_{201} . The d.c. voltage developed when a preset peak level is exceeded is fed back as a control voltage to V_2 , where the remote cut-off characteristic of the tube allows the gain of the stage to be modified.

V_{301} is used as a two-stage speech amplifier to feed the balanced modulator. V_{302} and V_{303} , in conjunction with a crystal diode, furnish voice control with a loudspeaker.

Construction and Alignment of Sideband Generator

The side-band generator is constructed on a $5 \times 9 \times 1\frac{1}{2}$ -inch chassis. Before construction is started the i.f. transformers can be modified as mentioned in Fig. 2. Transformer T_1 for the balanced modulator is altered as follows: Remove all the wire from the winding on the free end of the dowel. Double enough of this wire on itself to make a 25-turn jumble-wound bifilar winding $\frac{1}{4}$ inch from the remaining winding. Join the finish of one 25-turn winding to the start of the other and ground this junction to the bolt at the

top of the transformer which will pass through the hole in the can. The remaining ends are soldered to the unused trimmer terminals for tie-points. Apply coil dope and reassemble.

After construction of the unit is completed, the multipliers should be aligned first. This can best be done with an r.f. probe on a v.t.v.m.

Tune T_6 to the second harmonic of the l.f. oscillator, about 900 kc., and then tune T_7 to 2.7 Mc. with S_1 open. Close S_1 and tune the two 10-100 μ f. trimmers (mounted on the chassis) to resonate T_7 to 1.8 Mc. The output delivered to the mixer should measure about 12 to 15 volts in both positions of S_1 . Next, insert carrier by advancing the 5000-ohm control and then peak the grid winding of T_4 , indicating resonance by measuring the r.f. at a grid of V_2 . With the r.f. probe on J_1 , tune T_5 to 2.25 Mc. Several peaks will be noted, but the correct one will be obtained when switching S_1 results in little output change and turning down the carrier control reduces the signal to nearly zero. The output should run about $1\frac{1}{2}$ to 2 volts with full carrier insertion, measured across L_{101} (Fig. 4).

Alignment of the crystal filter is next. Referring to Fig. 3, it is seen that the filter has a very sharp cut-off near the carrier frequency due to the shunt crystals Y_2 and Y_6 . Since the carrier is always on the same side of the filter, the characteristic can be shaped for better attenuation near the carrier frequency.

In selecting crystals for the filter, an adequate supply should be obtained. At a dime apiece this shouldn't break the bank and will save time in alignment. The exact channels named in Fig. 2

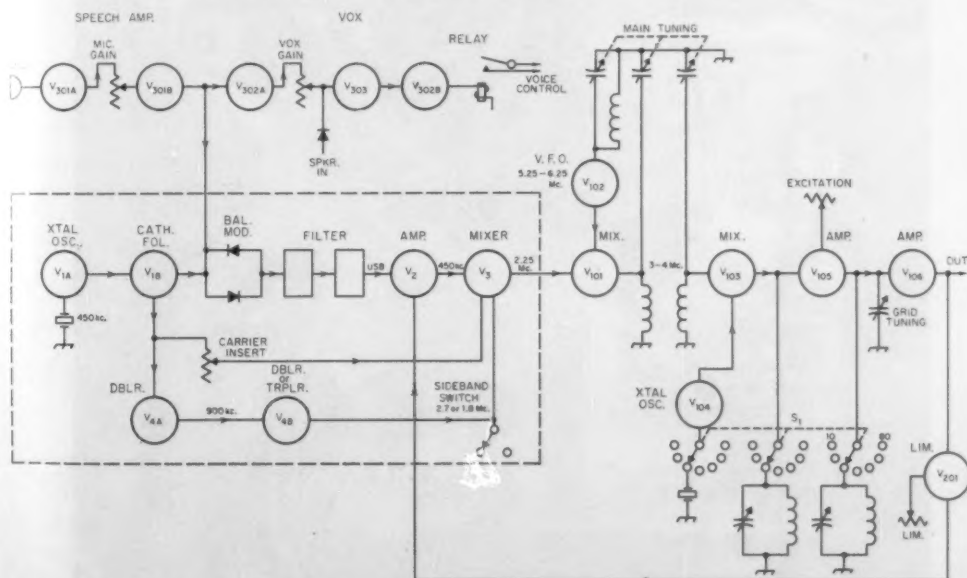
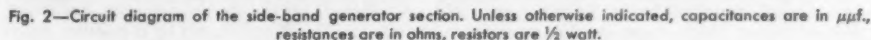
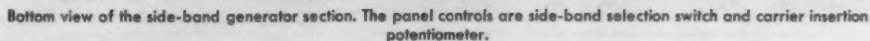


Fig. 1—Block diagram of the side-band exciter. The side-band generator proper is enclosed by dashed lines; this section of the exciter is built on a separate chassis. Side-band selection is obtained by using either the 4th or 6th harmonic of the low-frequency oscillator to convert the signal to 2.25 Mc.



T₀—900-kc. i.f. transformer, made by removing 28 feet of

Y₁, Y₇—455.6-kc. crystal. Surplus, marked "Channel 46 24.6 Mc."



are not required, but they should be adjacent and the lower frequency should not be below 440 kc. This will assure adequate 2nd-harmonic rejection of the selectable side-band signal output in the 3- to 4-Mc. channel when the dial is near the 4-Mc. end.

A preliminary check on the crystals can be made by trying them for oscillation in the oscillator. Those that oscillate can be further checked for frequency of the peaks by connecting them between the antenna post of a BC-221 frequency meter and an r.f. probe of a v.t.v.m. Pair the crystals according to the series peaks. Only two upper-channel crystals are required, and by choosing the highest-frequency pair the pass band will be broadest. The lower-channel crystal that oscillates at the lowest frequency will probably be best for the oscillator, the next higher pair for the shunt crystals Y_3 and Y_6 , and the next higher pair for the series crystals Y_2 and Y_5 .

The filter is aligned as follows: With the power off the unit, connect the BC-221 output terminal to the output winding of T_1 through a $5\text{-}\mu\text{f}$. capacitor. With the BC-221 set in the center of the pass band (455 kc.) peak the circuit with the r.f. probe on the transformer terminal. Move

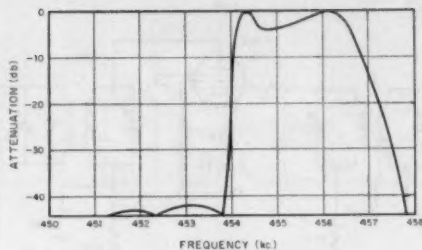
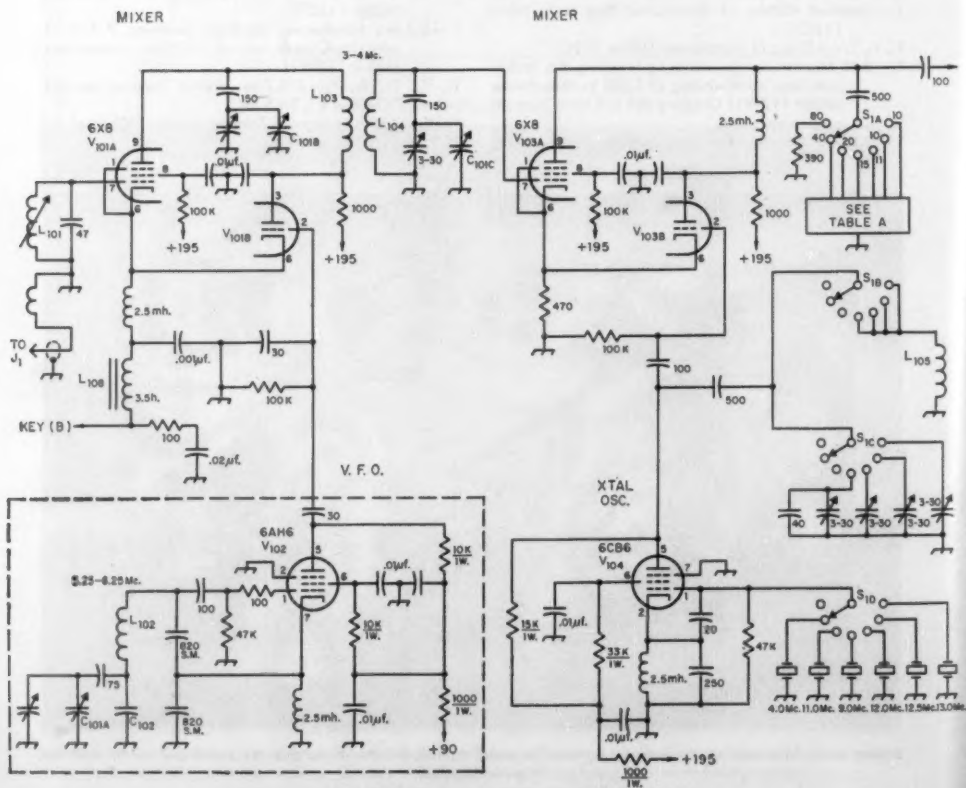


Fig. 3—Pass band of crystal filter after correct adjustment.

the leads and repeat for the windings of T_2 , T_3 and the plate winding of T_4 . Remove the crystal from the oscillator and connect the BC-221 output to the crystal socket.

Remove the 6X8 multiplier, V_4 , and temporarily ground the amplifier grid resistor at (E) and the audio feed to the diode modulator at (A). With the balanced modulator unbalanced by turning the arm of the 500-ohm potentiometer to one end, apply power and connect the r.f. probe to the plate of V_2 . Peak all trimmers in the filter.

Fig. 4. (See facing page.)



The pass-band and side-band rejection of the filter can be checked by moving the BC-221 across the filter frequencies. By small trimmer adjustments and rechecking, a suitable curve should be obtained. The curve of this particular unit is shown in Fig. 3. In constructing five such filters, similar curves have been obtained in each case without resorting to crystal grinding or overly-tedious selection.

After filter alignment is complete, replace the 6X8, the oscillator crystal, and unground point (A). With an audio oscillator fed to the balanced modulator through an ARC-5 receiver output transformer, which will be mounted later on the main chassis, retune the T_4 windings with the r.f. probe connected to the output winding of T_5 at J_1 .

The pass band can be checked, which will give an opportunity to judge the relative position of the crystal oscillator frequency. Modification of the 10- μ f. capacitor at the plate of V_{1A} may be necessary to move the oscillator to the right frequency.

With the audio input at zero, balance the 500-ohm potentiometer for minimum carrier. The 50-300 μ f. mica trimmer should aid the balance. If not, connect it to the other side of the poten-

tiometer. Mixer balance is obtained with the 2000-ohm potentiometer at V_2 , but this is not a critical adjustment.

Main Chassis Construction

Before laying out the main chassis it will be easier to build the bandswitch assembly. This is built in two parts: first the conversion oscillator and second the mixer/amplifier.

The oscillator section is built using three Centralab GGD switch sections assembled on a P-272 index assembly. A 1 $\frac{1}{4}$ by 2 $\frac{3}{4}$ -inch aluminum plate is mounted on the rear using the switch assembly bolts. This plate holds the four trimmers. The switch shaft is cut off behind the assembly so that a metal $\frac{1}{4}$ -inch shaft coupling can be attached for coupling to the mixer/amplifier section. This facilitates removal of the mixer/amplifier switch assembly.

Referring to Fig. 4, S_{1B} , S_{1C} and S_{1D} are the oscillator switching sections. Since the crystal oscillator is a screen feed-back type, when no output circuit is connected, fundamental output will result. This is used for conversion to 40 and 20 meters with crystal frequencies of 4.0 and 11.0 Mc. respectively. Converting to the higher bands requires an output circuit tuned to the second

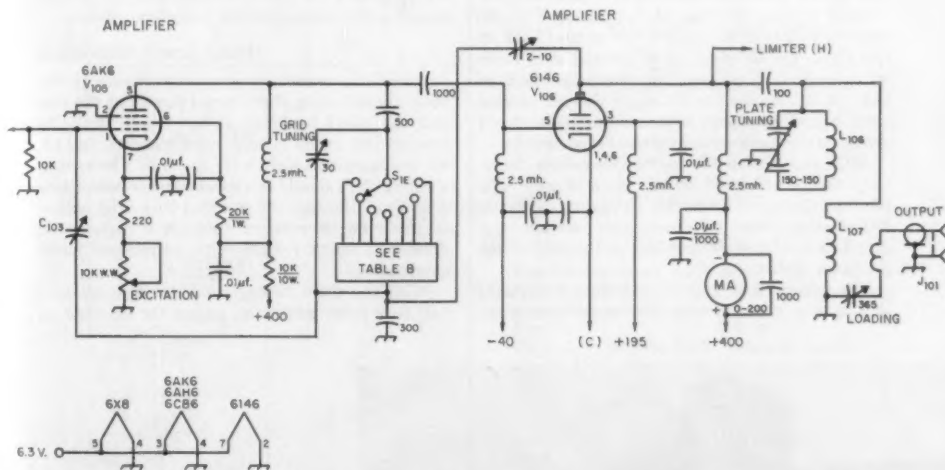


Fig. 4—Diagram of the r.f. circuit following the side-band generator of Fig. 2. Unless otherwise indicated, capacitances are in μ f., resistances are in ohms, resistors are $\frac{1}{2}$ watt.

- C₁₀₁—Triple 150- μ f. variable (from 3- to 6-Mc. ARC-5 receiver)
- C₁₀₂—4.7 μ f. N330 and 30 μ f. NPO in parallel.
- C₁₀₃—Small capacitor made by winding several turns of insulated wire around lead to pin 1 of V_{105} . Adjust by changing number of turns.
- L₁₀₁—80 turns No. 36 enam. on $\frac{1}{2}$ -inch diam. slug-tuned form (Miller 4400). Link is 3 turns wound over bottom end.
- L₁₀₂—24 turns No. 26 enam. on 1-inch diam. threaded ceramic form, with half-turn loop for adjustment. See text. (National XR-60 with slug removed.)

- L₁₀₃, L₁₀₄—40 turns No. 34 on $\frac{1}{2}$ -inch diam. slug-tuned form. (National XR-50). Spaced $\frac{3}{4}$ -inch on centers.
- L₁₀₅—17 turns No. 18 enam. on $\frac{1}{4}$ -inch diam. form.
- L₁₀₆—9 turns No. 18 wound 8 t.p.i. 1-inch diam. (B&W 3014).
- L₁₀₇—21 turns No. 20 wound 16 t.p.i. 1-inch diam. (B&W 3015). Link is 8 turns No. 18 enam. over cold end.
- L₁₀₈—3.5-h. choke. (No. 5634 from ARC-5 receiver.)
- S₁—See text. S_{1A} and S_{1B} wired to short unused mixer and amplifier coils.

harmonic of the crystal. Therefore, the coil L_{105} is switched in by S_{1B} while S_{1C} connects a trimmer on each of the upper bands for resonating L_{105} to 18.0, 24.0, 25.0, and 26.0 Mc. These convert the 3.0-Mc. side-band signal to 21.0, 27.0, 28.0 and 29.0 Mc. The lower 40 kc. of the 11-meter band is covered below zero on the main dial.

The mixer/amplifier switch assembly is built on a 3 × 6 inch L-shaped bracket with a 1/2-inch mounting foot, as shown in one of the photographs. One GGD switch section is mounted on each side of the plate. The amplifier or rear side is shown. The coils are mounted by threading them on a 1-inch brass bolt with head removed, which passes through the plate. Before threading the coils on, a nut is placed on each side of the plate, with a soldering lug under the mixer side. The poly forms can be softened enough for easy threading by filling the hole in them with coil dope. For mechanical convenience, a 100- μ f. capacitor is connected directly from the mixer plate to the amplifier grid. Then only one lead is required from the common switch terminal to the mixer plate, making easier installation possible. The same arrangement is used between the 6AK6 and the 6146.

All tuned circuits on the amplifier side are insulated from ground and bypassed by a 300- μ f. capacitor, across which the neutralizing voltage for the 6AK6 and the 6146 is developed.

Since mixing in V_{105A} is not required on 80 meters, a resistor is used for the output load on this band. On 40 meters a series trap (see Table A) is used to shunt out the second harmonic of the 4.0-Mc. oscillator. To short out all unused coils, one of the spare switch terminals is wired across to the common side of the tuned circuits.

After completion of the bandswitching units, they can be mounted on the main chassis. The piece of shaft cut from the oscillator section is slid through the mixer-amplifier section and attached to the shaft coupling at the rear of the oscillator section.

The underside of the v.f.o. section is enclosed in a 3 × 4 × 5-inch box. The main tuning ca-

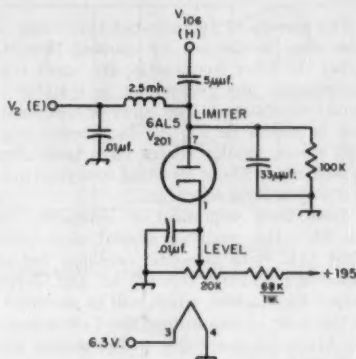


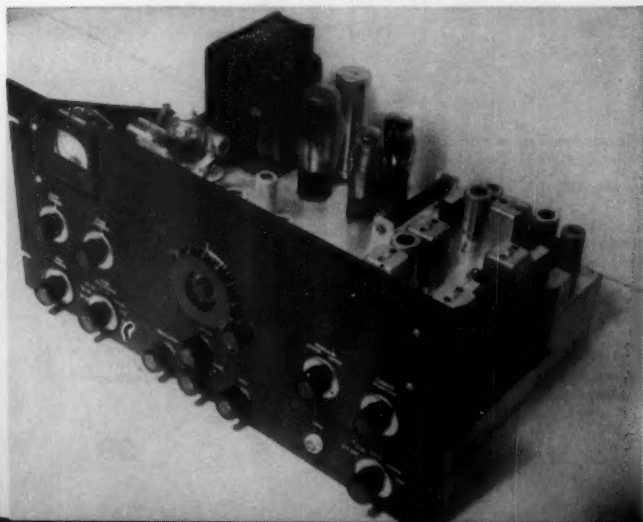
Fig. 5—The limiter circuit samples the r.f. output and reduces the r.f. gain if the signal exceeds the bias level.

pacitor and diode modulation transformer were taken from a 3- to 6-Mc. ARC-5 receiver. V.f.o. coil L_{102} is made with an extra half-turn loop through the inside of the form, for fine adjustment of the inductance. The 2500-ohm dropping resistor in the power supply (Fig. 7) is mounted on top of the chassis, since it dissipates about 25 watts. New mounting brackets will protect the terminals from accidental contact. The limiter, V_{201} , is mounted on an L-shaped bracket between the 6146 and the power transformer, to prevent coupling the output circuit under the chassis.

Main Chassis Alignment

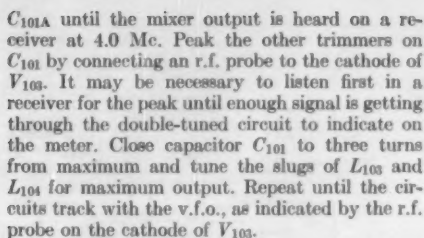
Attach the side-band generator chassis to the main chassis using sheet metal screws at the rear and the panel bushings at the front. With the band switch on 80 meters, carrier control full on, set the operation switch S_2 to v.f.o. The output winding of T_5 should be rechecked after connecting it to V_{101A} through the shielded lead. The output of the v.f.o. is reduced through a capacitance divider to about 1.4-2.0 volts, to prevent mixer overloading.

With the main tuning capacitor C_{101} set at a half turn from minimum, adjust the trimmer on



This complete side-band transmitter uses a filter made from inexpensive low-frequency crystals. The frequency control utilizes the tuning gang from an ARC-5 receiver. The dial has been recalibrated to read 0 to 1.0 Mc.

QST for



The 6AK6 output tuning can next be checked over the 80-meter band to make sure that the 30- μ f. panel control will tune the range. Next check the neutralization of the 6146 by connect-

Each coil wound on 1½-inch long 3/8-inch diam. polystyrene rod.

Each coil shunted by 3-30- μ f. trimmer.

Table B—6AK6 Coils

Each coil wound on 1-inch long $\frac{3}{8}$ -inch diam. polystyrene rod. Each coil shunted by 3–30- μ f. trimmer unless otherwise noted.

Band	Coil
80 m.	70 turns No. 36 enam., shunted by fixed 30 μ f.
40 m.	33 turns No. 30 enam.
20 m.	17 turns No. 22 enam.
15 m.	9 turns No. 18 enam.
11 m.	8 turns No. 18 enam.
10 m.	7 turns No. 18 enam.
10 m.	7 turns No. 18 enam.

Fig. 6—Speech amplifier and VOX circuits. Unless otherwise indicated, resistances are in ohms, resistors are $\frac{1}{2}$ watt.

K₃₀₁—5000-ohm s.p.d.t. relay (Potter-Brumfield SM5LS).

T₃₀₁—8-to-1 turns ratio output transformer (ARC-5 receiver output, No. 5631).

T₃₀₂—7K-to-50-ohm plate-to-line transformer, reversed (Triad A-51X).

J₃₀₁—Microphone jack (Amphenol 75-PC1M).

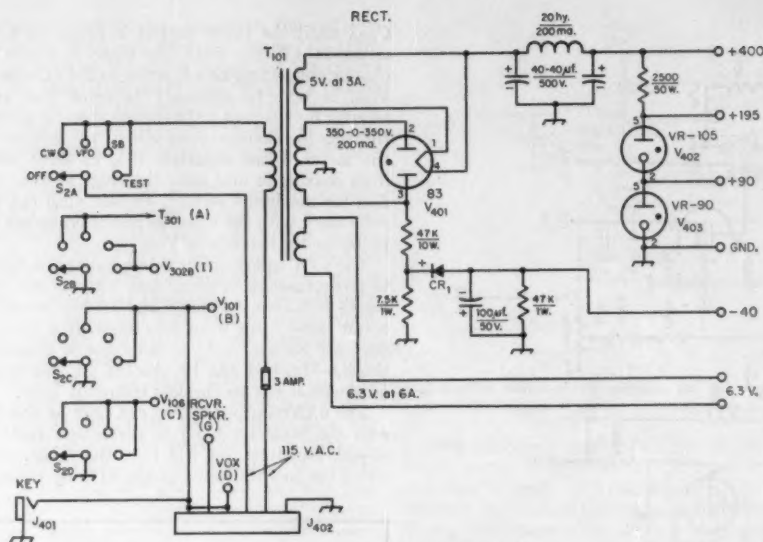


Fig. 7—The power supply section.

J₄₀₁—Open-circuit phone jack.

J₄₀₂—6-prong tube socket for external conditions.

S₂—Made of one 2-pole 5-position (4 used) shorting phenolic switch section (Centralab C) and one 2-

pole 5-position (4 used) non-shorting phenolic switch section (Centralab K) on one indexing assembly (Centralab P-121). Shorting section is S_{2A-B}.

CR₁—130-volt 65-ma. selenium.

T₁₀₁—Replacement power transformer (Thordarson 22R07).

ing the r.f. probe in the antenna output connector. (The cathode of the 6146 is open in this position of S₂.) With grid and plate tuning capacitors peaked for maximum output, set the 2-10- μ f. neutralizing capacitor for minimum output. If this does not fall within the range of the neutralizing capacitor, change the value of the 300- μ f. capacitor.

To neutralize the 6AK6, disconnect the B+ at the 10K 10-watt resistor and, with the r.f. probe on the plate, adjust C₁₀₃ for minimum feed-through. This completes 80-meter alignment and a rough neutralization which should be checked later on a higher band. Output can be checked by putting the operation switch to "test" with carrier inserted.

With the band switch on 40 meters, check the output of the crystal oscillator with the r.f. probe. With the receiver dial at 7.0 Mc., tune the v.f.o. dial until the signal from the mixer is heard about three turns from maximum capacity. (The 80-meter second harmonic will be heard with the capacitor about half open.)

If this calibration does not fall fairly close, with the bottom cover on, move the half-turn loop in L₁₀₂ until it does. Set the main dial to about the center of the band as indicated by the receiver, with the 30- μ f. grid-tuning capacitor in mid-range, and peak the active trimmer capacitors at S_{1A} and S_{1E}. Check the plate tuning of the 6146 at the same time. Repeat in the center of each band with the trimmers for the

band, first peaking the oscillator trimmer on the four upper bands. Uniform output across each band should be obtained by retuning the grid and plate of the 6146 with the panel controls.

To tune the 8.0-Mc. trap used on 40 meters, set the band switch on 40 meters, S₂ to Test, and remove the 12AU7 balanced mixer, V₃. With the dual 150- μ f. plate tuning capacitor near minimum capacity, output should be as indicated by the r.f. probe. Adjust the slug in the series-trap inductor until the output goes through a minimum, which should be nearly zero. Recheck the tuning of the 3-30- μ f. trimmer at 7150 kc. with the 12AU7 back in its socket and again recheck the trap if it is necessary to move the trimmer.

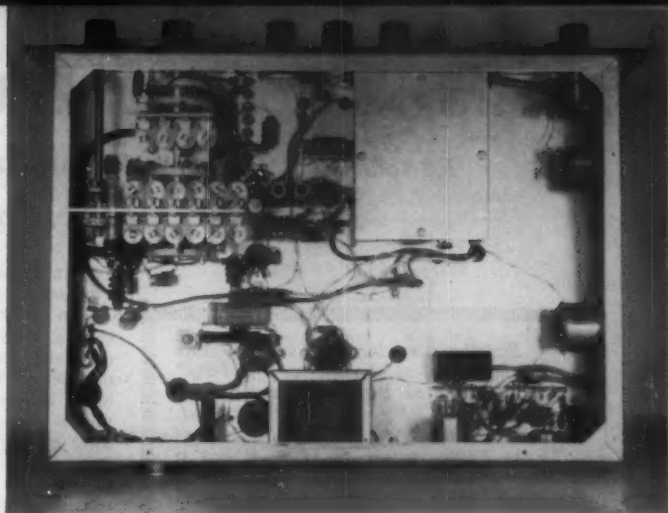
Recheck neutralization on one of the high-frequency bands and alignment is complete.

A temporary dial calibration can be placed on tape run around the edge of the main dial. Make the .5-1.0 portion at 80 meters and the 0-.5 on 15 meters if a general coverage receiver is not available.

Audio and Voice Control

The audio and voice control circuits are mounted behind the side-band generator chassis on the main chassis. A small plug-in relay is used for silent control of whatever circuits are desired. The audio gain and voice control gain (VOX) potentiometer leads are brought to the front panel through two-wire shielded cables. A positive

The v.f.o. coil, L_{102} , is housed in its own shield section (upper right of center) and the two coils L_{103} and L_{104} are mounted nearby at the left. Output jack, fuse, J_{401} , J_{402} and the bias potentiometer are mounted on rear apron of chassis.



voltage is developed across the 0.25- μ f. capacitor from rectified receiver audio, which prevents speaker operation of the voice relay. The shielded input lead is grounded at both V_{301A} and the mike input jack. After the audio wiring is complete, with the VOX pot set the bias to zero, by turning the arm to the ground end. The relay should close. Back the bias pot off from the ground end until the relay opens.

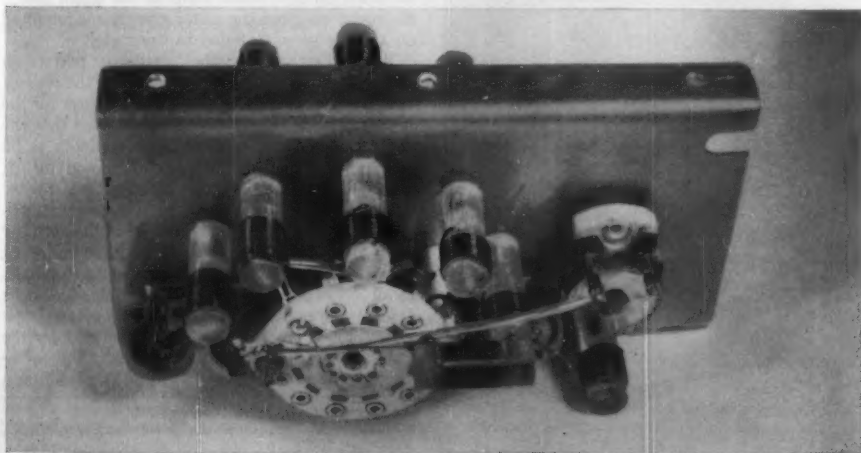
With the mike gain and VOX gain pots turned to suitable values, the relay should close instantly with speech but hold over by an amount determined by the RC constant in the grid of V_{302B} .

Main Tuning Dial

After the unit is complete, a permanent tuning dial can be made. The one shown is from an

ARC-5 transmitter and gives a larger scale than a receiver dial. The old calibration was removed by slipping the dial over the shaft of a grinder and tightening a nut. The grinder was turned on and sandpaper held against the dial until the old calibration was gone. Four coats of flat black spray paint were applied, with fine sanding between coats. The plain dial was attached to the capacitor shaft so a small scratch could be placed every 25 kc. The short line decals are easily lined up by cutting them about $\frac{1}{2}$ inch long and turning the excess over the back of the dial. After leaving the dial overnight, lacquer thinner was applied sparingly to remove the binder. This leaves shiny spots on the dial which are eliminated by spraying a coat of clear plastic over the whole dial. The result is a professional-looking dial with very little expense.

Assembly of the coils described in Table B.

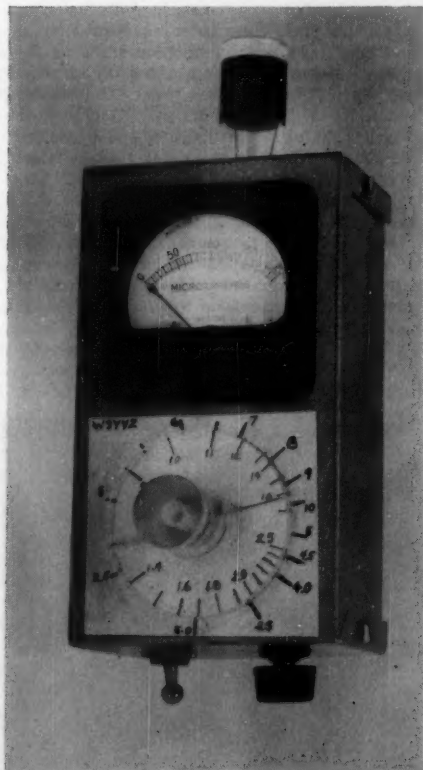


A Transistorized Grid-Dip Meter

1.3 to 35 Mc. Range; Self-Contained; Pocket-Size

BY HARRY M. NEBEN*, W9YVZ

Strictly speaking, we suppose this shouldn't be called a "grid-dip" meter since transistors don't have grids. But whatever it may be called, it's a mighty handy little instrument to have around. Because it has a built-in battery supply it can be used anywhere at any time, whether there's a nearby power line or not.



Built in a small "mini-box" type case, this pocket-size oscillator uses a pair of transistors, one as the oscillator and the other as a d.c. meter amplifier. The battery supply is contained in the case.

THE GRID-DIP meter is one of the ham's most useful tools. Through its use it is possible to measure the self-resonant frequencies of coils, to tell if a circuit is "in the band," and to determine whether that second stage is doubling or tripling. With the help of a few simple auxiliaries, it is also possible to measure such quantities as inductance and capacitance. However, most grid-dip meters have one disadvantage — there is a cord connected either to the power supply or to the power line. This cord can be a nuisance. The meter described is self-contained and is small enough to fit into a pocket.

The oscillator circuit for this grid-dip meter is built around a type 2N247 transistor. This transistor has a cut-off frequency of 30 megacycles, and little difficulty was encountered in getting it to oscillate at that frequency. The output of the oscillator is coupled through a small capacitance to a 1N34A diode rectifier having a variable load resistance so the rectifier output can be adjusted to stay within the maximum range of the d.c. meter used as an indicator. A CK722 transistor amplifier is used to increase the sensitivity of the meter, with a circuit similar to that described by W1CUT in November 1957 *QST*.¹

Construction

The oscillator and meter amplifier are built in a $3 \times 2\frac{1}{4} \times 5\frac{1}{4}$ inch aluminum box. As shown in the photographs, the meter and tuning capacitor are mounted on the top of the box; the coil socket is on one end, and the meter adjustment control (R_1) and on-off switch (S_1) are on the other end. Oscillator components are mounted on a terminal strip in the space beside the meter case and the meter amplifier is mounted on a lucite piece fastened to the meter.

When first wired, the oscillator performed successfully up to 20 megacycles using the resistor values recommended by the manufacturer for the 2N247. Further experimentation showed that the circuit could be made to oscillate reliably to 30 megacycles by using the values shown for R_1 and R_2 . It is recommended that these two resistor values be adjusted experimentally to give optimum performance with the individual 2N247 used. One 2N247 on hand required 1000 ohms at R_1 while another required 3300 ohms for optimum operation; thus the values shown, while typical, are not absolute.

The r.f. from the oscillator is rectified by the 1N34A and the d.c. output fed into the meter amplifier. It is necessary to limit the minimum

* 11316 S. Oakley Ave., Chicago 43, Ill.

¹ Campbell, "Transistorized Meter Sensitizer," *QST*, November, 1957.

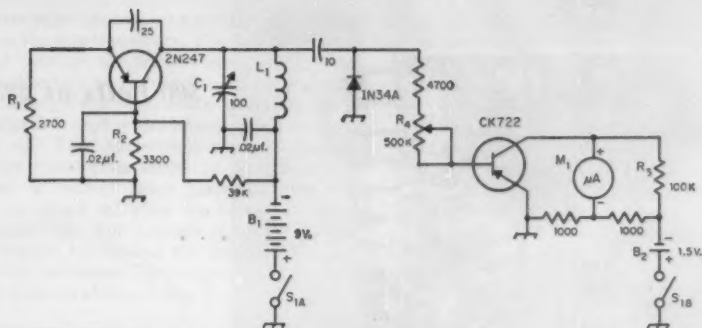


Fig. 1—Circuit of the transistorized grid-dip meter. Capacitances are in $\mu\text{f.}$ except where specified otherwise; fixed resistors are $\frac{1}{2}$ watt. Fixed capacitors are ceramic.

B_1, B_2 —Penlight cells.

C_1 —100- $\mu\text{f.}$ midget variable.

L_1 —1.3–2.5 Mc.: 140 turns No. 32 enam.

2.5–5 Mc.: 60 turns No. 28 enam.

5–10 Mc.: 20 turns No. 28 enam.

10–20 Mc.: 10 turns No. 18 enam.

20–35 Mc.: 5 turns No. 16 enam.

All close-wound on $\frac{3}{4}$ -inch diameter polystyrene forms (Amphenol 24-5H).

M_1 —Microammeter or 0–1 milliammeter.

R_1, R_2, R_3 —See text for discussion of values.

R_4 —0.5-megohm volume control.

S_1 —D.p.s.t. toggle.

value of the load resistor to 4700 ohms to prevent pulling the oscillator out of oscillation. The setting of the 0.5-megohm rheostat with its limiting resistor does not seriously affect the frequency calibration of the oscillator.

The meter amplifier is a familiar circuit to most transistor fans. As an exact zero setting of the meter is not required, resistor R_3 simply can be adjusted so that the meter reads near zero when the oscillator is not functioning. The meter used in the pictured unit was a 200-microampere surplus meter. Meters of other ranges such as a 0–1 ma. may be used and R_3 chosen to give zero reading with the oscillator not operating. In fact, if a 25-microampere meter is used, the CK722 amplifier may be omitted and the meter connected directly between the bottom of R_4 and chassis.

Calibration and Use

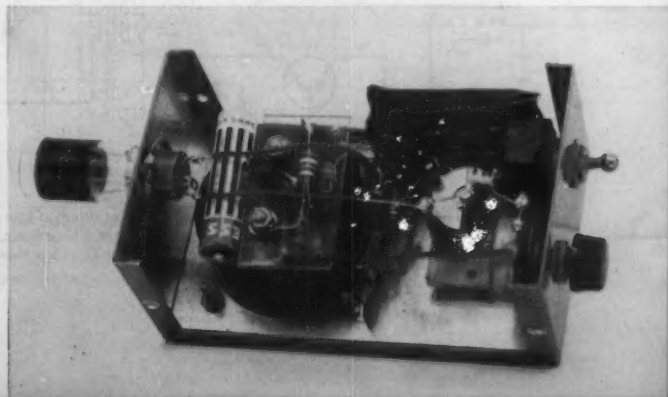
The grid-dip meter can be calibrated from any general coverage communications receiver. However, care must be taken to see that it is not accidentally calibrated on the receiver image instead of on the true signal frequency.

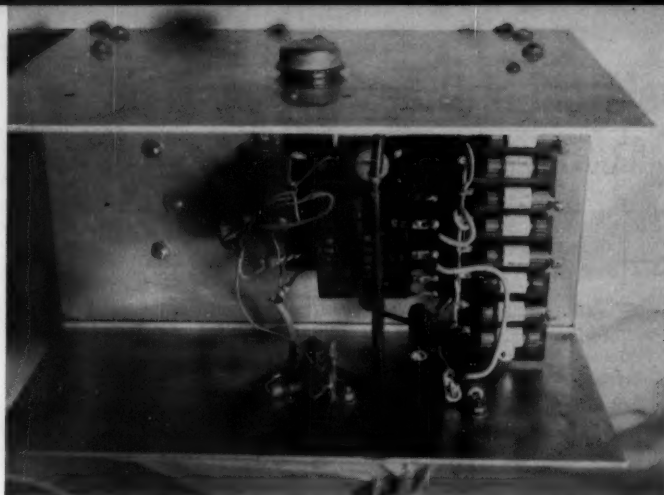
Wind the highest-frequency coil first, and get

the circuit oscillating satisfactorily by adjusting R_1 and R_2 , if necessary. Then wind the lowest-frequency coil and note the highest frequency to which it will tune. If desired, this band may be marked on the dial; 100-ke. steps are convenient. Then wind the second 2.5–5 Mc. coil. This order is recommended as it is easier to adjust coils by removing turns than by adding them or winding a new coil. Wind a few more turns than recommended in the coil table and then take off turns until the low-frequency end of the second coil range just meets the high-frequency end of the first coil range. Cement the turns in place and calibrate this coil on the dial. For the second range it is recommended that points each 500 ke. be marked on the dial. Repeat the procedure, making the low-frequency end of the third range just meet the high-frequency end of the second range. Mark the dial in 1-megacycle steps. Then proceed in the same manner with the fourth and fifth coils.

Methods of using the grid-dip meter have been described many times in magazine articles and in the *ARRL Handbook*. Once one has a good grid-dip meter it becomes indispensable. This pocket-size meter is an especially convenient one.

The oscillator circuit components, with the exception of the tuned circuit, are mounted on a lug strip just to the right of the meter in this view. The small plastic plate fastened to the meter terminals serves as a mounting board for the meter amplifier components. Penlight cells for the oscillator supply are held in place with plastic tape.





500 Volts at 225 Ma.

A 500-volt 225-ma. transistor power supply for mobile use. The transistors are mounted on large aluminum surfaces to provide cooling. Rectifiers are silicon.

100-Watt Transistor Mobile Power Unit

BY ROBERT L. KARL,* W8QFH

THE POWER transistor of the type designed for switching at low frequency is ideally suited for use in mobile power supplies. However, the general lack of suitable components and design data has kept most amateurs from taking advantage of the features that supplies of this type have to offer. It is hoped that an account of some experimental work done by the author, with assistance from W9MZN, W8ZM and W8BNG, will be of interest to others who are contemplating a similar project.

The design was aimed at a transistor supply that would replace the old stand-by PE103 used to power a 50-watt mobile rig. An output of 500 volts at 225 ma. was needed. While several suitable transistor types are now on the market, the 2N278 was selected for the job. This unit is readily available. It can be obtained from

United Motors dealers who service Delco receivers throughout the United States. The price, although somewhat high, is not prohibitive. The 2N278 has a maximum current rating of 12 amperes and operates from a 12-volt car-battery system.

Fig. 1 shows the circuit of the first experimental attempt. The transformer T_1 was designed for a frequency of 400 cycles and was wound on a core of stacked 0.014-inch hi-nickel silicon laminations. ("Audio C" core material is also suitable.) In addition to the high-voltage secondary L_2 and the 12-volt primary L_1 , the transformer has a split feed-back winding, L_3 , of 12 to 15 volts.

How the Circuit Works

When voltage is applied to this circuit, one of the transistors will start conducting more

*22060 Charter, Detroit 41, Mich.

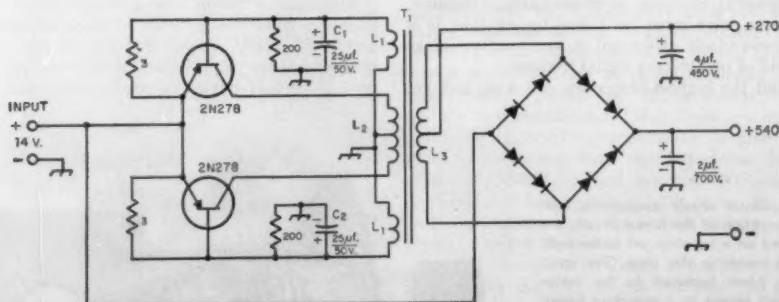


Fig. 1—Circuit of the first experimental transistor mobile power supply. Capacitors are electrolytic. Resistors are 2 watts or more, and values are in ohms. Rectifier units (8 required) are 130-volt a.c. input, 500-ma. d.c. output silicon (Sarkes-Tarzan M500). Transformer T_1 is discussed in the text (Powertran P3015 or Meteor M88565). (See footnote 1, page 170).

than the other because of manufacturing differences in the two transistors. The flow of collector current through the transformer primary is in such a direction as to bias the conducting transistor into greater conduction while the other transistor is biased with the opposite polarity to cut it off. The current continues to increase until the transformer saturates. At this point a reversal of current takes place and the first transistor is cut off while the second is driven into conduction. The resistors aid in the starting of oscillation by biasing the transistors out of the nonlinear region. The output wave is essentially square as shown in Fig. 2.

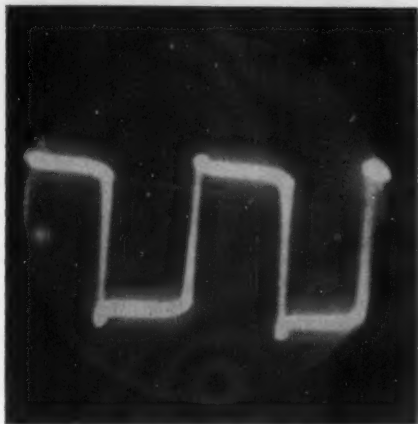


Fig. 2—Oscilloscope showing the input waveform of the circuit of Fig. 1 after despiking.

At the instant of reversal, a high-voltage spike is generated by the collapsing field of the transformer. Although of short duration, these spikes can cause transistor failure if their amplitude exceeds the collector diode voltage rating. C_1 and C_2 are used to suppress the spikes as shown in Fig. 2. The amplitude of the spike can also be

limited by the use of transformer core material of relatively high residual magnetism, since with such a core the field does not collapse so abruptly when the magnetizing force is removed.

Improving Efficiency

With the arrangement of Fig. 1, a full-load efficiency of 72 per cent was obtained. At the suggestion of W8ZM, attention was turned to the use of a high-permeability toroid feedback-transformer system and a hypersil power transformer. The circuit used is shown in Fig. 3. In this circuit, it is the small toroid transformer, rather than the power transformer, that saturates to provide chopper action. It is also the frequency-determining element. In this particular case, the frequency checked at 980 cycles. An efficiency of 85 per cent was obtained at a full-load output of 500 volts, 225 ma. With the better core material, no despiking network was found necessary. The network consisting of C_1 , R_1 , CR_1 and CR_2 is for the purpose of suppressing random transient peaks.

The circuit of Fig. 1 provides automatic protection against overload. If the supply is overloaded, the circuit simply stops oscillating. In the circuit of Fig. 3, however, feedback is more independent of the load and therefore overload protection is not automatic. Proper fusing of both input and output circuits is recommended.

In both circuits, silicon diodes are used in the bridge rectifier to conserve space and make it unnecessary to supply rectifier filament power. These rectifiers also help to keep the efficiency up, since the drop across them is much less than with tube rectifiers. To obtain the necessary voltage rating, two diode units in series are required for each leg of the bridge. Since the rectified output on each half of the cycle is very close to a square wave, the output with full-wave rectification requires very little filtering.

The supply shown in the photograph was built by W8BNG and the transformers were designed by W8ZM. The problem of heat sink (cooling) was solved by mounting the two transistors on

(Continued on page 170)

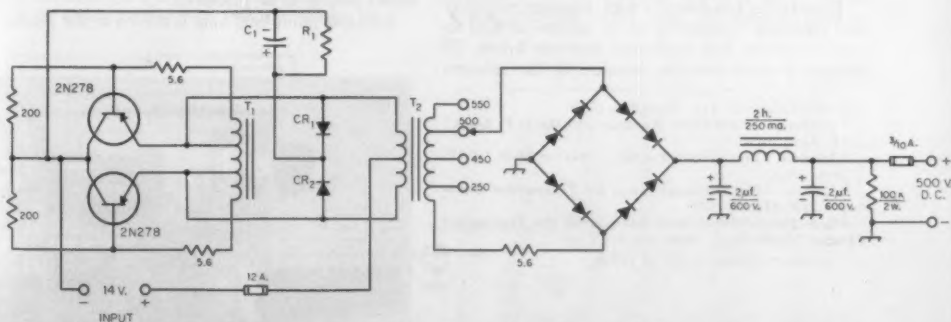


Fig. 3—Transistor power-supply circuit using a toroid feedback transformer and power transformer with hypersil core. Capacitors are electrolytic. Resistors are 2 watts and values are in ohms ($K = 1000$). CR_1 and CR_2 are 70-volt 500 ma. silicon rectifiers (Sarkes-Tarzian 10M500). R_1 is 150 to 500 ohms, 2 watts. C_1 is a 5 to 20 μ f. 50-volt electrolytic. Power rectifier units (8 required) are 130-volt a.c. input, 500-ma. d.c. output silicon (Sarkes-Tarzian M500). T_1 is the feedback transformer. (Osborne 716). T_2 is the 1000-cycle power transformer (Osborne 14572-14) (See footnote 1, p. 170).



The direction finder installed on a car, using a homemade window mount. The battery clip at the bottom of the support is the "pointer" indicating the null direction.

The 75-meter phone band offers some interesting possibilities for hidden transmitter hunts — especially if you use simple direction-finding equipment like that described in this article.

INTEREST in the sport of transmitter hunting seems to be confined largely to the 10-meter band. Several excellent articles on transmitter hunting have appeared in *QST* in recent years and these have dealt exclusively with loops designed for operation on this band.^{1, 2, 3, 4}

Here in the Los Angeles area, transmitter hunts are regularly conducted on 75 meters as well as on 10 meters. For week-end daytime hunts, 75 meters is more suitable because of the relative

* 1300 California Ave., Compton, Calif.

¹ Norberg, "Transmitter Hunting with the D.F. Loop," *QST*, April, 1954.

² Duncan, "Transmitter Hunting — Seattle Style," *QST*, March, 1955.

³ Amfahr, "Unidirectional Loops for Transmitter Hunting," *QST*, March, 1955.

⁴ Braschwitz, "Directional Antenna for the Transmitter Hunter," *QST*, April, 1956.

All components of the d.f. are mounted on the top and sides of a "Channel-lock" type box. In this view R_1 is on the left wall at the upper left and C_1 is at the lower left. L_1 , S_1 and the output connector are on the right wall. The loop stick and whip mount on the outside.

Transmitter Hunting on 75 Meters

How to Make a Simple Loop and Direction Finder

BY JOHN ISAACS,* W6PZV

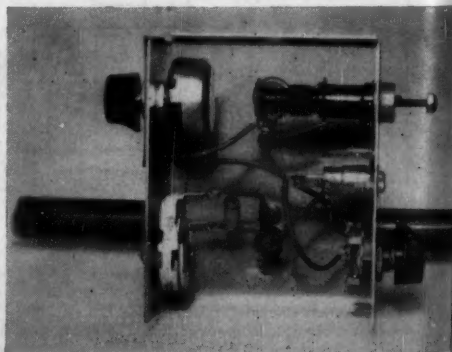
absence of QRM and because there is less chance for multiple reception paths.

The author hopes to stimulate some interest in operation on 75 meters by describing two direction finders which are easy to build. One of these has unidirectional properties.

The Simple Loop

The local rules in the Los Angeles area generally recognize the first car in as the winner in the 75-meter hunts. Consequently, some of the participants start out with no special equipment except a receiver. Some of the more advanced in this class also use an S meter. Transmitter hunting in this fashion usually becomes quite frustrating and it is not long before some serious consideration is given to the construction of some kind of loop. Those that have them usually give their 10-meter loops a try first. These work reasonably well on 75 but the sensitivity is low. A tuned loop is to be preferred.

A simple hand-held loop is shown in the photo-



graph. Fig. 1 gives the circuit. This type of loop is described in the *ARRL Antenna Book*.⁵ The loop is made up of a metal can of the type used for small plastic bandages, two copper tubing fittings, a length of copper tubing, a small tuning capacitor, some hook-up wire and a length of coax cable. The mechanical parts are soldered together and then the tubing is cut and the joint is insulated with plastic electrical tape. The tuning capacitor is mounted in the can.

The hardest part is threading the wire into the copper tubing. Enamel-covered wire will short out, so time should not be spent in using this type of wire. The one-turn link connects directly to the coax cable and this in turn plugs into the receiver. The loop is tuned for maximum output on the desired frequency. The sensitivity is good and the nulls are quite sharp.

Simple Loop Theory

The theory of the loop antenna is adequately covered in the previously-mentioned articles. It should be sufficient to say here that a loop has two null points 180 degrees apart.

Now, two nulls are better than no null at all, but this characteristic causes a slight problem. When the loop is turned until the signal is at minimum the loop gives the line of the hidden transmitter but not its direction. By taking a bearing at two locations it is possible to draw two lines on a map and note where they intersect. This procedure must usually be repeated during the hunt because the accuracy of such a fix is not too great with the equipment ordinarily used. Nevertheless, with a little practice, this bidirectional loop will give good results and will greatly increase the chances of being first at the location of the hidden transmitter.

Something Better

The obvious and ultimate solution is to use some sort of direction finder that will produce only one null as it is rotated. Fortunately, the bidirectional loop can be made to function in this manner by the addition of what is called a "sense antenna." Marine and aircraft direction-finder receivers, which are designed to operate over a fairly wide frequency range, have a rather com-



Hand-held simple loop uses copper tubing and a small metal box. This loop uses the circuit of Fig. 1. The tubing is cut at the center opposite the box and the ends insulated from each other by plastic tape.

pliated input circuit. This is necessary so that the outputs from the loop and the sense antenna are always combined in the proper phase relationship. But if a direction finder is to operate on only one frequency, or over a rather narrow range of frequencies, its input circuit can be greatly simplified.

Such a direction finder for 75 meters is shown in the photograph and its circuit is shown in Fig. 2.

Construction Details

The loop portion of this direction finder (d.f.) is actually a loopstick of the variety usually found in portable receivers for the broadcast band. The original winding is removed and a new winding placed over the ferrite core. The loop is tuned to

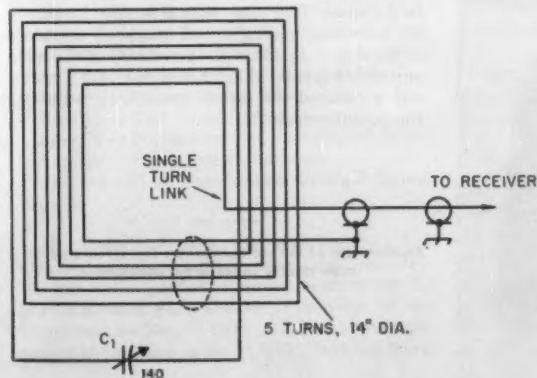


Fig. 1—Circuit of a simple loop antenna for 75-meter work. C_1 , 140 $\mu\text{f.}$, may be either an air or ceramic variable.

⁵ The *ARRL Antenna Book*, 1949 edition, page 264.

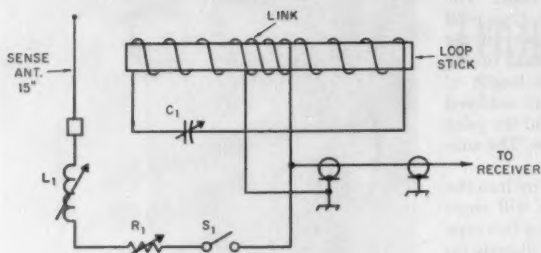


Fig. 2—A short whip as a "sense" antenna combined with a ferrite-core loop forms a direction finder that is compact and easily installed on a car.

C_1 —140 $\mu\text{f.}$ variable (125- $\mu\text{f.}$ ceramic trimmer in parallel with 15- $\mu\text{f.}$ ceramic fixed).

L_1 —Approx. 140 $\mu\text{h.}$ adjustable (Miller No. 4512 or equivalent.)

R_1 —1000-ohm carbon potentiometer.

S_1 —S.p.s.t.

Loopstick—Miller No. 705-A, with original winding removed and wound with 20 turns of No. 22 enam. Link is two turns at center. Winding ends secured with Scotch electrical tape.

resonance by means of C_1 . A grid-dip meter can be used to make final adjustment of the number of turns of wire. This loop stick is not quite as sensitive as the hand-held loop but it is sensitive enough, and it is easier to make up and is more compact.

A two-turn link is used to obtain an output from the loop. This is placed around the center of the core.

The sense antenna consists of a 15-inch whip, an adjustable inductance that will resonate the

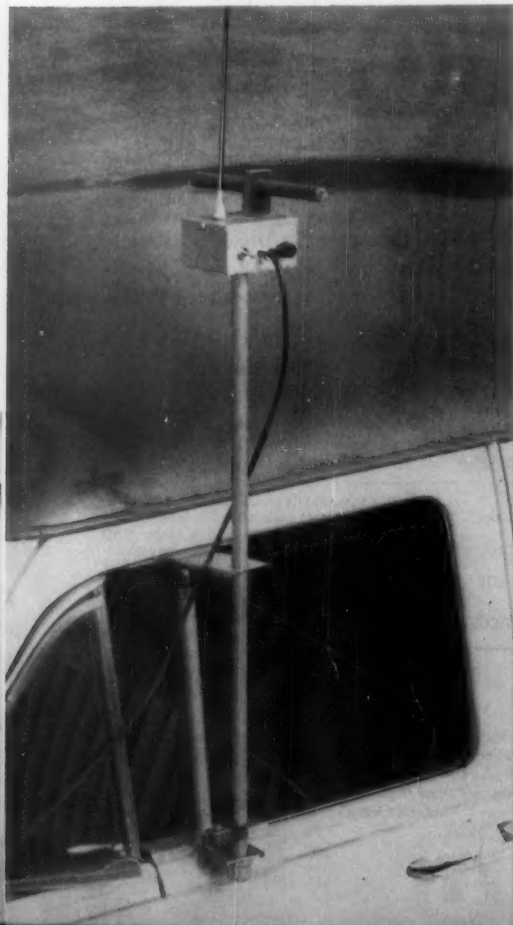
whip as a quarter-wave antenna, and a potentiometer to control the output of the antenna. The switch is used to disconnect the sense antenna during the tune-up procedure.

The whip was secured from a local auto supply store for 89 cents. It came attached to a large suction cup and was intended to be mounted on the roof of a car and thereby create the impression that the owner had a radio telephone in the car. Any antenna of the same length, or longer, will do as well. If a longer one is used the inductance of L_1 will have to be reduced proportionately.

The whip, the loop stick, the inductance L_1 , the capacitor C_1 , the potentiometer R_1 , and the switch S_1 are all mounted on a 2 \times 3 \times 4-inch box chassis. The loopstick is mounted and protected by means of a piece of $\frac{1}{2}$ -inch thick laminated plastic and a length of fiber tubing which fits over the entire loop stick. A section of $\frac{1}{2}$ -inch electrical conduit is attached to the bottom of the chassis box and this supports the d.f. The photographs show a close-up of the d.f. as well as the complete unit mounted on a car and ready for a hunt. A large battery clip serves as a direction indicator.

Direction-Finder Theory

To produce an output having only one null it is necessary that the outputs of the loop and the sense antenna be combined. There must, however, be a 90-degree phase difference between the two and also the signal strength from each must be the same. The phase shift is secured by tuning the sense antenna slightly off frequency by means of the slug in L_1 . Since the sensitivity of the whip antenna is greater than that of the loop, its output is reduced the proper amount by adjusting the potentiometer R_1 .



Another view of the car installation. The sense antenna is more clearly visible in this photograph.

Tune-Up Procedure

The initial tune up of the direction finder is a little critical and time consuming but after it is completed any subsequent adjustments will be very easy.

The author has never tried to tune the direction finder by using a grid-dip meter or small oscillator. Possibly the initial rough adjustment could be done in this manner. The final adjustment at least should be done under field conditions. The larger the field the better. The presence of power lines or telephone lines will introduce some error in the directional properties of the d.f. Under operating conditions they will cause a little error at times but it is just a temporary condition and subsequent readings will put you back on the beam.

The author uses a small battery-operated transmitter with a built-in vertical antenna (BC-745). A friend's mobile rig would work fine, also, but the output should be reduced as much as possible. The car with the direction finder is parked about 300 feet from the test transmitter. Remove your transmitting antenna before trying to make any loop adjustments and remember to leave it off during transmitter hunts. With the test transmitter operating on the proper frequency, disconnect the sense antenna with switch S_1 and peak the loop stick using C_1 and watching the S meter on the receiver. If no S meter is available one should be installed before the direction finder project is started. Once the loop stick is peaked, no further adjustment of C_1 will be necessary. Now connect the sense antenna and turn R_1 to minimum resistance. Then vary the adjustable slug of L_1 until a maximum reading of the S meter is again noted. It may be necessary to turn the d.f. a bit during this adjustment to obtain a larger reading than with the loop stick alone. The last turn of the slug is quite critical and some hand capacitance effect may be noted.

Now turn the d.f. so that one side (not an end)

of the loop stick is toward the test transmitter. Turn R_1 a complete revolution and if the proper side was chosen a definite null should be observed on the S meter for one particular position of R_1 . If not, turn the d.f. 180 degrees and try again. This time leave R_1 at the setting which produces the minimum reading. Now adjust L_1 very slowly until the S-meter reading is reduced still further. Repeat this several times, first R_1 and then L_1 , until the best minimum is obtained.

Finally, as a check have the test transmitter move around the d.f. and follow it by turning the d.f. If the tuning has been done properly the null will always be broadside to the loop stick. Make a note of the proper side of the d.f. for the null and the job is finished.

Using the Direction Finder

The technique of using the d.f. is simple and it only takes one transmitter hunt to become an expert. There is no need to triangulate as with a simple loop. It is just necessary to keep the d.f. tuned for a null reading. As the hidden transmitter is approached the d.f. must be turned in order to continue to get a null.

It is a good idea to continue on in the original direction until the d.f. indicates that the transmitter is at right angles to line of travel. At this point a right-angled turn toward the transmitter should be made if possible and the procedure repeated until destination is reached. If the hidden transmitter is kept dead ahead at all times it is difficult to get an accurate impression as to how far away it is except by signal strength.

One more pointer: If the area in which the transmitter will be hidden is known ahead of time it is a good idea to start out from the center of this area. (Of course, local rules may preclude this possibility.) The fellow with the simple loop will generally start out near the edge of a known area and you will on the average have a head start on him.

Strays

Here's the schedule for the MARS (AF) Eastern Technical Net for the month of June, same frequencies as previously.

June 1 — Electronic Flight Test Equipment

June 8 — Antenna Symposium

June 15 — The Engine Scope

June 22 — Nucleonics and Radiological Safety

June 29 — Education's Challenge

The net will be closed down during July and August.

Mr. Ludwig Arnson, who sent history's first maritime wireless distress signal, died recently. He was radio (pardon, wireless) operator on the liner *Koonland* when she lost a propeller off the Irish coast on Dec. 7, 1903. A British cruiser appeared in response to his "CQD," that call being

the predecessor of "SOS." Mr. Arnson later became president of the Radio Receptor Co., Inc.

W8TZO notes that there is currently listed for sale in a certain classified section a 6-volt dynamotor with an output of 400 volts at 1375 amps.

K2AEQ recently worked DJ2HC on 3.5 Mc. while using a transistor transmitter with a power input of 1500 mw. This was on March 31 at 10:30 p.m. EST, and he wonders if this is a first transatlantic QSO with a transistor rig.

W5APM, parked across the street from a funeral parlor, broke up the services when he called CQ and came through on the p.a. system.

A Weather-Resistant Quad

Fiberglass Spreaders in a Two-Band Beam

BY DAVID R. WEINSTOCK,* K9GFV

Another method of supporting a quad antenna. This one makes use of Fiberglass fishing-pole stock to replace the customary bamboo spreaders which have a tendency to deteriorate when exposed to weather.

OVER THE past several years there have been enough articles on cubical quads to fairly well establish various dimensions and specifications, although it will be shown later that these do not always hold true. The mechanical form has also generally followed a somewhat standard appearance. Performance and economy in building have been among the major attractions to the prospective antenna builder.

This article will deal only briefly with the electrical considerations and is primarily intended to provide information for the construction of a strong, lightweight, weather-resistant quad.

About eight months ago a commercial 10/15-meter quad was put up at the home QTH. This quad was conventional, as most, and used bamboo fishing poles for the spreaders. After several months' use, it was noticed that there was quite a bit of play in the connections between the boom and the end supports and, as a consequence, the bamboo spreaders whipped considerably in any kind of a breeze. It was at that point that the

decision was reached to build a more rugged structure.

This antenna can be built for considerably less than what it cost me, if the builder has time to visit junk yards and second-hand-metal dealers and has access to some machine tools. Not being too skilled myself, nor having access to the necessary power tools, and not being able to leave my business, it was necessary for me to buy the materials new and to have the machine work done in a commercial machine shop.

The raw-material cost was \$50.00, including wire, coax connectors, and other hardware. The machine-shop work was \$38.00. Between the junk box, second-hand stores and do-it-yourself, it should be possible to build this quad for about \$40.00 to \$45.00. Naturally, quads can be built more reasonably, but some of the features of this one would then have to be sacrificed.

To meet my requirements with a minimum use of nuts and bolts, my first step was to decide on what materials to use for the two most important parts—the spreaders and supports for the spreaders.

Spreaders

While walking through a sports store one day, I noticed a still-fishing pole made of four telescoping Fiberglass sections. These sections are each approximately 52 inches long and are tapered inside and out so that the ends may be telescoped to taper lock at the joints. Two of these sections were used for each spreader, giving a total length on each leg of about 8 feet 4 inches. A thin varnish spray was applied to the end of the smaller section where it locks with

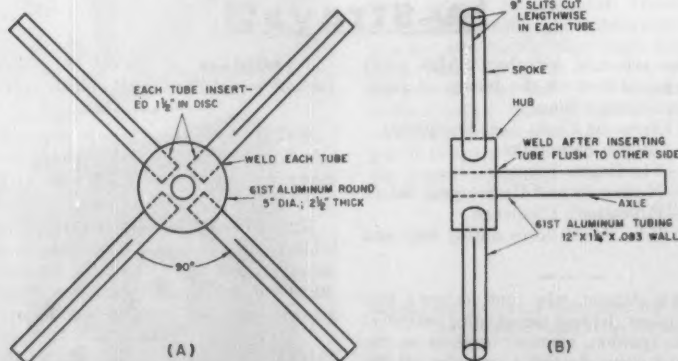


Fig. 1—A—Aluminum-tubing "spokes" inserted in a "hub" of heavy aluminum serve as mountings for the Fiberglass spreaders. B—The "hubs" that support the quad spreaders are fitted with "axles" that slide into the ends of the boom.

the larger-diameter section. This was done to provide a tighter and stronger locking effect at the joint.

The Fiberglass sections were obtained from the factory that makes the fishing poles and which happens to be located in Chicago. Although the sections were seconds as far as fishing poles are concerned, they were first class for my purpose.

The inside diameter of the two sections joined together starts at $1\frac{1}{4}$ inches and then tapers down to approximately 0.75 inch at the end of the 8-foot 4-inch length. The outside diameter is approximately 1.33 inches at the butt end and 0.83 inch at the small end. These dimensions provide a strong spreader which does not sag and has very little whip. Best of all is the weather resistance of the Fiberglass. A small cork was tapped into the end of each pole, plastic tape was wrapped over and around the end, and a plastic spray was applied over the ends — all, of course, for the purpose of keeping water out of the hollow sections.

Spreader Mounting

The next big job was the spreader supports. Each of the two end supports required the following:

- 1 — 61 ST aluminum solid round 5 inches in diameter, $2\frac{1}{2}$ inches thick
- 5 — 61 ST aluminum tubing $1\frac{1}{4}$ inches diameter, 0.083-inch wall, 12 inches long.

Four holes $1\frac{1}{4}$ inches in diameter by $1\frac{1}{2}$ inches deep, spaced 90 degrees, were bored into the perimeter of the solid round aluminum piece. (See Fig. 1A). Another hole $1\frac{1}{4}$ inches in diameter was bored all the way through the center of the aluminum round. (See Fig. 1B). The five 12-inch lengths of $1\frac{1}{4}$ -inch tubing were inserted into these holes and welded to the aluminum round. At this point I had a component comparable to a wheel of a car with a hub, axle, and four spokes radiating at 90-degree intervals.

The next problem was how to insert the $1\frac{1}{4}$ -inch tubing (the spokes) into the $1\frac{1}{4}$ -inch i.d. Fiberglass, especially since the inside diameter of the Fiberglass was tapered. This was solved by cutting slits in the ends of each spoke. These slits were cut down the length of the tubing to a point about $1\frac{1}{2}$ inches from the hub. This was done so that as the Fiberglass pole was slipped over the spokes, the slits would allow the spokes to compress and follow the inside taper of the Fiberglass poles.

When the butt of the Fiberglass pole reached the unsplit portion of the spoke, the joint began to lock, and by turning the pole as it was pushed onto the tubing, it "froze" into place flush against the hub and actually held without any additional work. To make sure, however, a hose clamp was put around the Fiberglass pole near the point where it butted against the hub.

Quad Loops

The quad loops were made of No. 14 soft-drawn copper wire. To assure proper dimensions,

the four sides were measured off (11 feet $3\frac{1}{2}$ inches for 15 meters and 8 feet $4\frac{1}{2}$ inches for 10 meters) and a loop of wire was soldered to each of the four corners. Hose clamps were slipped over the spreaders and the clamping bolts were passed through the loops. The clamps were then adjusted on the spreaders so that the wires between were taut, with the spreaders slightly bowed. The reflector elements are duplicates of the driven elements, except that transmission-line spacers are used to tie the ends of the elements together.

The reflector stubs were made of $\frac{1}{8}$ -inch copper rod. Originally, Copperweld wire was used but could not be straightened satisfactorily, and soft-drawn copper wire bends too easily. The weight of the copper rods is not enough to cause the element wires to sag noticeably. The shorting bars consist of two alligator clips with a short piece of No. 12 wire soldered between them to give a spread of $3\frac{1}{2}$ inches, which equals the length of the spacing insulator.

The Boom

The last step was to join the axle to the boom. For the boom an 8-foot length of 61 ST 1.5 inches o.d. \times 0.083-inch wall was used. Therefore, the i.d. of the boom was 1.334 inches and, since the o.d. of the axle was 1.25 inches, there was a play between the two of 0.084 inch. Fortunately, I was able to obtain some plastic sleeving with an i.d. of 1.25 inches and a 0.04-inch wall. By slipping this plastic sleeve over the 1.25-inch axle, it increased the o.d. to 1.33 inches, which made it just 0.004 inch less than the i.d. of the boom. The result was a very tight fit between the axle and the boom, eliminating all play between the two. Since aluminum against aluminum will eventually form a weld, the plastic sleeve enables me to remove the boom if it ever becomes necessary.

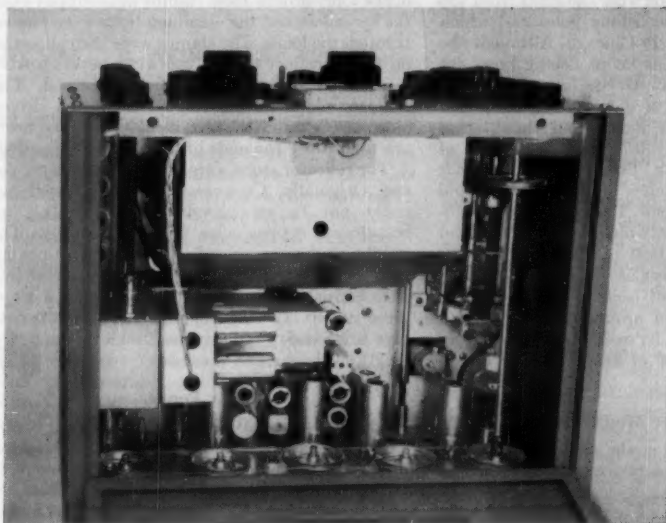
Two holes were drilled at right angles to each other through the boom and axle, and $\frac{1}{4}$ -inch bolts were used to lock the axle and boom together. The total weight, boom included, is approximately 22 pounds.

Adjustment

The dimensions of the elements were selected from the ARRL *Antenna Book* and previous articles in *QST* and other publications. These dimensions were also checked out with the formula $238/Mc$. When the antenna was at the 25-foot height before the tower was cranked up, the grid-dip meter showed that the 15-meter antenna resonated at 21.0 Mc. However, when the transmission line was attached and the transmitter turned on, the s.w.r. at 21.450 was 1.75 to 1, and went higher as the frequency was decreased. After much cut and try, a 14-inch stub was added to the 15-meter driven element. After adjusting the shorting bar, an s.w.r. of slightly less than 1.1:1 and a f/b of 28 db. were obtained. This adjustment, however, did not give maximum gain. When adjustment was made for maximum gain it was found that the s.w.r. ran from 1.3:1 at 21.250 Mc. to 1.04:1 at

(Continued on page 156)

• Recent Equipment—



In this "top view" the 6146 output stage is at the lower right, and the associated all-band tank capacitor is just above it. The five pulleys wired together control the five band switches that are visible in another photo. The large shield at the top center covers the two three-gang tuning capacitors.

Cosmophone 35 Bilateral Transceiver

As if ham radio isn't complicated enough these days, Cosmos Industries has to come along and offer a "bilateral transceiver", of all things. However, if you can get over the shock of a transceiver being bilateral and dig into the thing a little, you find that a mighty interesting piece of gear hides behind the ponderous title.

Essentially the Cosmophone 35 is a single-sideband station in one package, with the necessary power supply in another case. It is apparently designed for home-station use, and its case dimensions (r.f. package) of 17 inches wide, 12 inches high and 15 inches deep would seem to eliminate its adaptation to mobile work by all but a few members of the station-wagon set. But calling it a "station" is no idle phrase; the 35 is truly a station, since it is capable of completely divorcing the receiver and transmitter tuning functions, or combining them in one control if desired.

Look at it this way. There are two tuning dials on the 35, marked A and B. Each one has its own pointer on the slide-rule dial scale. A four-position switch on the panel is marked RA-TA, RA-TB, RB-TA and RB-TB. Think "receive" for R and "transmit" for T, and you see that this switch sets you up for the four possible modes of operation. For example, on RA-TA you receive and transmit on the frequency, controlled by the setting of knob A. On RA-TB you receive on the frequency set by knob A and transmit on the frequency set by knob B. It takes longer to explain than it does to understand with the unit

in front of you. The possibilities should be obvious. You can tune into a net with the A dial and the switch set on RA-TA, and you can also be set up on another net by switching to RB-TB for a few seconds. This way you can hop back and forth if desired. Or you may want to work DX outside of your own frequency assignment, in which case you would use the RA-TB or RB-TA setting. You can check on the QRM level of your transmitter frequency without detuning from the DX station's channel. It's like having two transmitters and two receivers. Those are only the very obvious tricks; there will undoubtedly be many more developed as the units get into the hands of the real "operators." The fact that the 35 also has provision for c.w. and "a.m." operation merely extends the tactics to those fields as well. (The a.m. provision is carrier plus one sideband, for reasons that will be obvious later on.)

Receiver

A block diagram of the receiver section is shown in Fig. 1. The receiver is a double-conversion deal with a crystal-controlled first oscillator and a tunable second oscillator. This second oscillator has two separate tuned circuits, the ones controlled by the panel knobs A and B. Which one is active at any instant depends, of course, upon the setting of the four-position switch mentioned earlier. The output of the second mixer is at 455 kc., and it passes through an i.f. amplifier

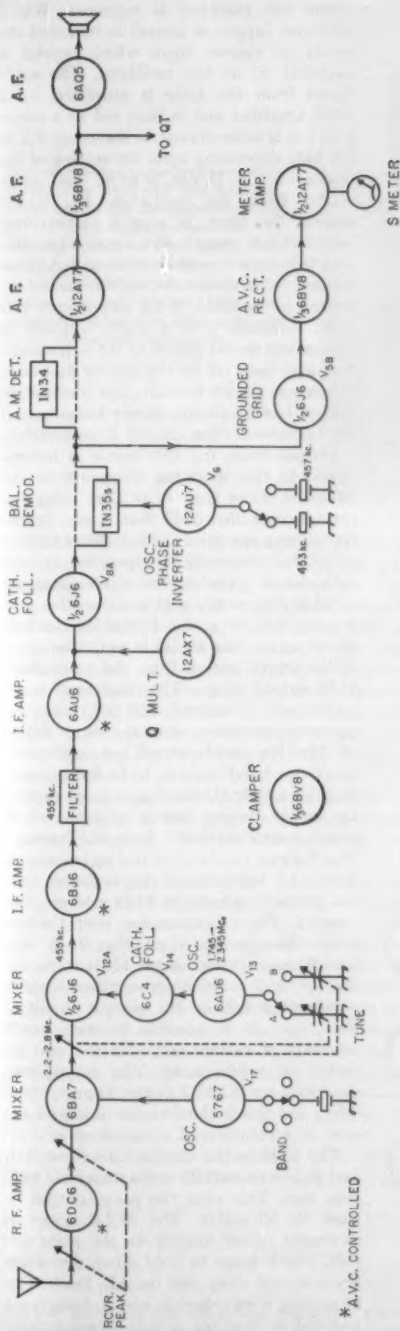


Fig. 1—Block diagram of the Cosmophone 35 during reception.

and a 3-ke. wide mechanical filter on its way to a balanced demodulator (1N35s) for c.w. or s.s.b. reception or a diode (1N34) for a.m. Selectivity in addition to that provided by the mechanical filter is supplied by a Q multiplier that can be used in either a notch or peak condition. The b.f.o., V_6 , is crystal-controlled because its frequency must be accurately placed and maintained on one side or the other of the filter passband. Following detection the audio signal is amplified by two triode stages before passing on to the 6AQ5 output stage.

Prior to detection the signal is sampled and passed through a grounded-grid stage and then to an a.v.c. rectifier (6BV8 diode). A.v.c. as well as manual gain is applied to the r.f. amplifier and two i.f. amplifier stages. The a.v.c. line is metered to provide an S-meter indication. The 6BV8 diode marked "Clamper" is a biased diode that during reception limits the a.v.c. control voltage to a maximum of about -20 volts. During transmission the a.v.c. bus is held at -150 volts, for receiver protection. The clamper tube helps to speed recovery of the receiver after transmission, by quickly pulling the a.v.c. line down to -20 volts, where it can rapidly arrive at the operating condition.

While you still have one of your little blue peepers on Fig. 1, this might be a good time to discuss panel controls directly associated with the receiver. The two main tuning controls have already been mentioned, although it wasn't brought out that these are delightful two-speed planetary controls that allow you to hurry across the band or to sneak up on a signal. The fast tuning corresponds to a rate of 60 kc./revolution, and the slow speed is 12 kc./revolution. These tuning controls handle three-gang capacitors that tune the oscillator and two tuned circuits between the two mixers. A panel control marked "Recvr Peak" tunes the front end, as indicated in Fig. 1, and a "Recvr Ant Trim" in the 6DC6 grid circuit compensates for any reactance introduced by the antenna. The Q Multiplier and manual gain controls have already been implied. The selection of the b.f.o. crystal at V_6 depends upon which sideband is being transmitted, as will be mentioned again later.

Transmitter

A block diagram of the Cosmoe 35 in the transmit condition is shown in Fig. 2. Tubes that are active during reception as well as being marked with the manufacturer's designation; e.g., tunable oscillator V_6 is used during both transmit and receive. In some cases one section of a tube is used during transmit and the other section is used during receive.

Following a 6AU6 speech amplifier, a 6J6 triode section drives the 1N35s in a balanced-modulator circuit. This balanced modulator and the 12AU7 oscillator, V_6 , were used as the demodulator and b.f.o. during reception. The double-sideband signal is fed to a grounded-grid stage and then through the mechanical filter,

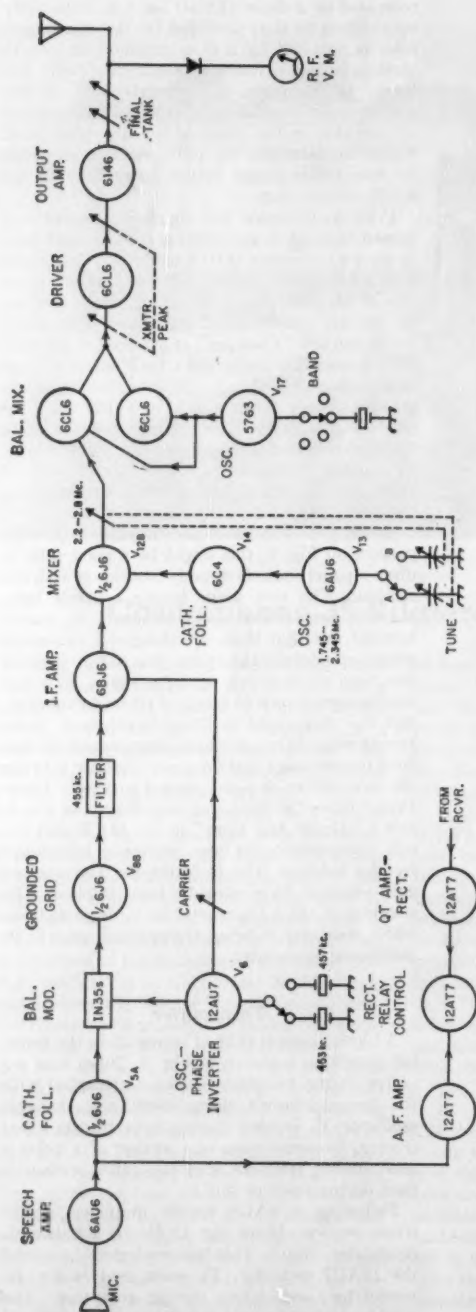


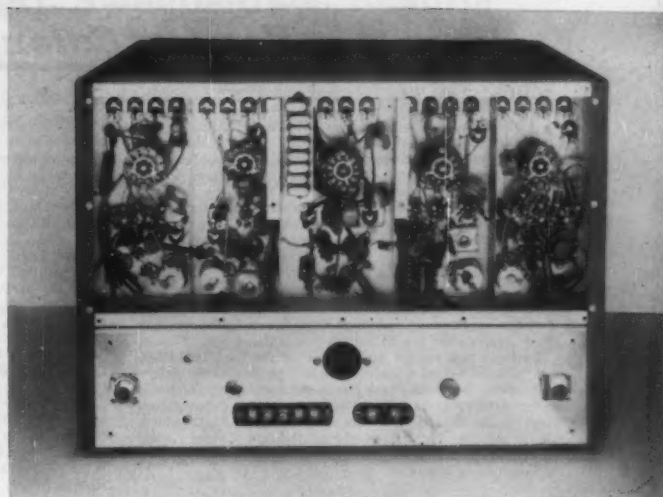
Fig. 2—Block diagram of the 35 when transmitting.

where one sideband is removed. Which sideband (upper or lower) is removed depends, of course, upon which crystal is switched in at the oscillator. The s.s.b. signal from the filter is amplified by a 6BJ6 amplifier and is then fed to a mixer where it is heterodyned to the range 2.2 to 2.8 Mc., depending upon the setting of the tuning control. If a.m. is to be used, some carrier from the oscillator, V_6 , is fed around the filter, to give a carrier-plus-one-sideband signal. C.w. operation also uses this carrier, with no sideband. A panel control (screwdriver slot) of the carrier insertion is provided; if for any reason you want sideband plus a slight amount of carrier you would switch to the a.m. condition and back off on the carrier insertion. When you switch to s.s.b., the transmitter always has maximum carrier balance, and the carrier-insertion control is inoperative.

Output from the first mixer is heterodyned to the operating frequency in the balanced mixer (pair of 6CL6s) using the crystal-controlled 5763 that is also operative during reception. This balanced mixer circuit has the oscillator signal fed to both cathodes in parallel; the sideband signal is fed to one control grid and the other grid is grounded for audio. Following the balanced mixer, the signal is amplified by a 6CL6 driver and fed to the neutralized 6146 output stage. The final tank is an "all-band" (National MB-40L) that requires no switching over the range 3.5 to 30 Mc. Its panel control has calibration marks for band centers, to facilitate resetting. To adjust the loading, a series capacitor in the output line is adjusted via a panel control marked "Antenna Tuning." The S meter can be switched to become an output r.f. voltmeter during transmit, or it can be used to indicate 6146 grid or plate current. The r.f. voltmeter isn't the obvious thing indicated in Fig. 2; it is a logarithmic device using a 1N34 to rectify the r.f. and a selenium rectifier to give compression action. By using a circuit of this type, it is possible to note small amounts of carrier and still not pin the meter on voice peaks. The circuit was described by W2ALJ in the August, 1953, *QST*, and this is the first use of it we have seen in a commercial transmitter.

The 6146 in the output runs Class AB₁ and delivers about 25 watts under the two-tone test. This puts the p.e.p. output at close to 50 watts. The 6CL6 driver is swamped rather heavily in the plate circuit, which helps to hold down distortion if you should stray past the AB₁ limits. The swamping is switched as you go from band to band, so that the gain is approximately the same on all bands. This constant gain can be appreciated by users of some other equipment.

Rear view with a panel removed shows the receiver "front end" and the transmitter driver. The compartments, from left to right, house respectively the 6DC6 grid circuits, 6BA7 grid, 5763 and crystals, 6CL6s balanced mixer, and 6CLC-6146 coupling. The coaxial fittings are for receiver input and transmitter output; the other jacks are for key and microphone.



The VOX and anti-trip circuits are usual, and panel controls are included for setting the gains through the two channels. A total of *six* relays in the Cosmos 35 handles the various switching functions; three relays are associated with the transfer of d.c. and bias circuits for the send-receive cycles, and three relays are associated with the transfer of tuned circuits in the variable-oscillator and 2.2-2.8 Mc. string. These latter relays are inoperative when transceiving; they come into play if an RA-TB or RB-TA combination is used.

C.w. operation is obtained through carrier insertion and no audio; grid-block keying is used on the 6BJ6, V_{12B} , the 6CL6 driver and the 6146 output stage.

External connections at the rear of the unit provide terminals for a loudspeaker, auxiliary audio input and output terminals, and -150 volts during receive, to be applied to a following linear amplifier when one is used. Separate antenna connectors for receiver and transmitter are provided, and one might think at first glance that the omission of an antenna relay is an oversight. To the contrary, the omission apparently was to simplify the addition of a following linear amplifier; when using the Cosmophone 35 "barefoot" the antenna relay can be mounted right on the back of the unit.

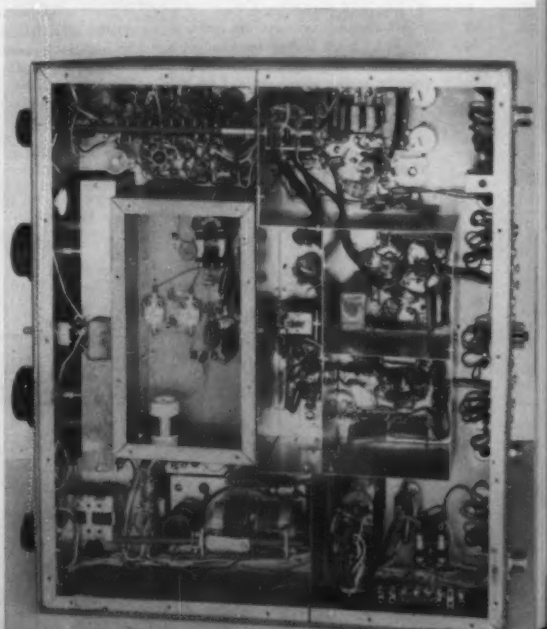
The power supply, a separate unit, uses a 5R4GY rectifier in a +600-volt supply, a 5U4GB

for +300 volts and OB2-OB2 stabilized +210, and a 6X5 in a OA2-stabilized -108 volts.

We can't tell you anything about the instruction book for the Cosmophone 35 because one wasn't available at the time of writing. However, you shouldn't need one unless something goes wrong, because the whole unit is quite straightforward and there is nothing tricky about connecting it to an antenna, a speaker and the a.c. line. Anyone who has ever operated an s.s.b. station should be able to handle the Cosmophone like Old Home Week, and even if you're a stranger to the Donald Duck stuff you can practice for a while on c.w. or a.m.

— B. G.

Some of the relays are visible when the bottom plate is removed. The rectangular compartment just left of center houses the variable oscillator coil; the relay switches it from one tuning capacitor to another. Audio circuits are at the upper left.



June 1958

Hamfest Calendar

California — The second annual Hamfest Picnic, sponsored by the San Fernando Valley RC, will be held June 8 at the Victory-Van Owen Park, across the wash from the Naval Armory (same location as last year). There will be rigs on two, six and ten to guide you in. Free coffee, soft drinks, ice cream and candy, games and prizes for all age groups. Registration starts at 1030. Advance tickets \$1.50, at the gate \$1.75. Swap shop. Bring your own lunch. For further info contact Vic Levine, K6OKT, 6455 Ben Ave., North Hollywood, phone PO 1-9739.

Georgia — The Atlanta Radio Club will hold its annual hamfest on Sunday, June 8, at the Mickey Cochran American Legion Post No. 216, 1250 Watts Road NW, Atlanta. This location is west of Atlanta, just off the Bankhead Highway. There will be transmitter hunts on 10 and 75 meters, a get-together of the Peach Net, a chicken dinner, and many other activities. In addition there will be a dutch supper and dance Saturday evening. Tickets are \$2.00 adults, \$1.25 children. For tickets and information contact George E. Hunt Jr., K4DOW, 1754 Clifton Way, SE, Atlanta 16. Phone Drake 7-0912.

Illinois — Starved Rock RC Hamfest, June 8 at the La Salle County 4-H Home and Picnic area southwest of Ottawa, on Illinois State Route 71 (same place as last year). Follow Route 23 to south end of Illinois River bridge, turn west on Rte. 71. Follow big yellow hamfest signs. Plenty of parking area and adequate facilities for all. Free swap section. Advance registrations \$1.00 if received prior May 30, otherwise \$1.50. The hamfest site is within a short driving distance of Starved Rock State Park and recreation areas. An all-day affair for Midwest hams and their families. Contact Starved Rock Radio Club, RFD #1, Box 171, Oglesby.

Iowa — The Iowa 160-meter hamfest will be held at Morris Lake near Clarion on June 8. Everyone invited. No charge. For further info contact G. D. Warland, K0AHZ, 1117 Walnut St., Webster City.

Kansas — The Central Kansas Radio Club will sponsor its 10th annual hamfest in Salina at Kenwood Park on June 8. Registration \$1.00 per person. Each person to bring a covered dish, with free drinks supplied by the club. Entertainment for the ladies and games for the kids. Contests and prizes. Rain or shine. For further info contact Joe W. Addison, W8PKD, 908 South 11th St., Salina.

Mississippi — The Cleveland ARC will sponsor its annual hamfest picnic on June 8. Bring your own lunch, which will be spread picnic style. Free drinks. Program to be announced later. (Sorry, but we have no further info on location or whom to contact. — Ed.)

Missouri — The Missouri Net Hamfest will be held in Sedalia, June 8, at the Missouri State Fair Grounds. Admission \$1.00 per person, basket lunch, free hot coffee and cold soft drinks. Swap shop, events for the OMs, XYLs or YLs. Everyone welcome. For further info contact Mrs. Phyllis French, W0WIE, Rte. 4, Sedalia.

Nebraska — The Dawes County Amateur Radio Club will sponsor its annual picnic on June 1 at Chadron State

Park, 10 miles south of Chadron, on Highway 19. Signs will be posted. Mobiles can check in on 3850 with a transmitter at the park. There will be a transmitter hunt and a swap table. Each person to bring food, which will be served family style. Coffee and soft drinks furnished by the club. Rain or shine. For further info contact Mrs. Bonnie Davis, KN6JGE, 320 North Chadron Ave., Chadron.

New York — RAGS (the Radio Amateurs of Greater Syracuse) will hold their annual family picnic on Sunday, June 15, at Pratt's Falls (2 1/4 miles NNE of Pompey). Activities from 2 to 5 p.m., with the picnic scheduled for 5 p.m. until dark. Refreshments furnished. Area clubs are invited to attend. For information and tickets (sorry, prices unknown — Ed.) contact R. Etherington, K2EAP, 208 Fay Lane, Minoa, or phone OL 6-9568.

New York — The Rome Radio Club Ham-Family Day has been scheduled for May 25 at Beck's Grove, Blossvale, commencing at noon. Entertainment for the whole family. Registration at the gate is \$4.50. Mobiles check in with W2OFQ on 3900 kc. and 29 Mc. For further info contact Harvey Walte, K2HWS, RD #1, Blossvale.

North Dakota — The annual North Dakota hamfest and picnic will be held at Red Willow Lake, 25 miles northwest of Cooperstown, just west of N.D. Highway 1, on June 15. (Check locally for further details — none were available at this writing.)

Ohio — The Northeastern Ohio V.H.F. 50-Mc. Group will hold its third annual picnic on June 22, at the Wadsworth Municipal Park, Wadsworth. Contests, prizes, gifts, and fun galore for the whole family. For further info contact Harry E. Pownell, W8PXX, Route 2, Alliance.

Pennsylvania — The Ninth Annual Gabfest of the Uniontown ARC will be held on Saturday June 21, at the club house on the old Pittsburgh Road, just off Route 51, two miles north of Uniontown. The program will include contests, prizes, horseshoes and movies. Refreshments available. W3PIE will be on 10 meters. Registration is \$2.00. This affair is stag. For further info contact the Uniontown ARC at P. O. Box 844, Uniontown.

Saskatchewan — The Saskatoon ARC is sponsoring this year's Saskatchewan hamfest, which will be held on June 29-July 1. For details contact Don Hunter, VE5HQ, 927 Avenue N. South, Saskatoon.

Vermont — The annual Burlington Amateur Radio Club Uniontown Field Day will be held at "Clarey's Bayside," Malletts Bay, on June 15. Treasure hunts on 75, 10 and 2 meters. Auction, boat rides, swimming, etc. For further info and motel, cabin or hotel reservations write to John Mansfield, W1OJO, P. O. Box 6, Winoski.

Washington — The Fourth Annual Family Picnic of the "Royal Order of Hoot Owls" will be held on Sunday, June 15, at Gaffney's Lake Wilderness Resort in Maple Valley, 16 miles east of Seattle. Open to ROHO membership only. Games and prizes. Hat contest for XYLs. Pot luck dinner at 1300. A station at the resort will be on 50.4 Mc.

X-Strays

W2MTD sent us part of a recent contract negotiated between the American-Bosch Arma Corp. and the Engineers Ass'n of Arma local 418 IUE, AFL-CIO, which provides that one of the

fringe benefits furnished by the company shall be the cost of League membership. Having helped to negotiate the contract, W2MTD is now engaged in signing up as many members as possible.

24th ARRL Sweepstakes Results

Part II — Phone and Club Totals

IF YOU'RE one of the multitude who imbibed W1ZDP's 12-page c.w. compendium (May QST), you know the 1957 Sweepstakes was the greatest! Phone-wise alone, entries leaped ahead 18.7 per cent to 623 logs. Keen interest is evident in the number of very high scores, the number of scores over 50,000, the many contestants who worked all sections and the intense club competition. It was a big year for the vocalist. See if you don't agree!

Up 47 per cent was the number of scores over the 100-K mark (shown in italics), with a whopping 60 per cent rise in those reaching 50,000: *W1s* BAN BFB DDD DXS EKO EOR FYF FZ GFH JLN JNX OGU PKV QIB YWU ZVG/7, *W2s* VCZ VDX, *K2s* BHP MPB SGO TCD/2, *W3s* DHM FEP MDE MSK PQT WQW YBI ZIH, *W4s* EDQ FGH GYX/KH6 HKJ KZF UJV, *K4s* BCN BZJ CTU HUU KBA, *W5s* DQK HMU IWL KC MYI NXF PSR VU, *K5s* EDM HEW IAX IIN, *W6s* AMH BSY CBE EIG GTG IIM PQW QIV ZTY ZYC, *K6s* BWD EVR ICS INU IUL JKQ LOM OOW YQC, *W7s* BJV BLX BSW CAF CBP CTZ FIN NPV OVA ZCA ZJW, *W8s* AJW SSA VOW, *K8s* ZEK CPM, *W9s* AIU FVU HIM KMN NZM OHO PQA QAX QXO YOX, *K9s* ALP ATZ CLO EED, *W0s* DGG EDX JEE PRZ VQC WVO YQ, *VEs* 4KX 5ZM.

Among the fellows who talked up five hundred or more throat-taxing QSOs were: *W0EDX* 854, *K6EVR* 816, *W6PQW* 815, *W3WQW* 740, *W1YWU* 714, *K4CTU* 700, *W5DQK* 700, *W0YQ* 667, *W0PRZ* 650, *W7CAF* 645, *W7BSW* 608, *W6BSY* 600, *K6BWD* 600, *W5MYI* 594, *W7CBP* 581, *W2VCZ* 570, *W6CBE* 560, *W8AJW*

560, *W7BJV* 558, *W7NPV* 532, *W6IIM* 529, *W1EOR* 524, *W4FGH* 524, *W7BLX* 524, *W9OHO* 521, *W5NXF* 519, *W5VU* 517, *W0VQC* 514, *W9NZM* 506, *K5HEW* 505, *K9CLO* 503. Noteworthy again this year is *W6PQW*'s third-ranking contact figure, reflecting what low-power, perseverance and fortitude can do in a single-band stint on 28 Mc.

Multipliers are the thing, as any good contest man knows, and the following group snagged all 73 with all but three operators doing it the low-power way: *W1s* BAN FZ YWU, *W2VCZ*, *W3MSK*, *W5DQK*, *W6CBE*, *K6LOM*, *W7BSW*, *W8AJW*, *K8AEK*, *W0s* EDX PRZ. Almost in league with this select clientele with 72 to their credit were: *W1EOR*, *W6ZZC*, *K6BWD*, *W8NZM*, *K9ALP*.

So each of you can see how your score shapes up with the high man in your vicinity, here are the licensing area leaders:

<i>W1YWU</i>.....156,366	<i>W0EDX</i>.....186,880
<i>W2VCZ</i>.....124,830	<i>VE2KG</i>.....6,138
<i>W3MSK</i>.....104,244	<i>VE3DYB</i>.....34,692
<i>K4CTU</i>.....93,130	<i>VE4KX</i>.....51,072
<i>W5DQK</i>.....152,643	<i>VE5ZM</i>.....66,294
<i>W6PQW</i>.....147,864	<i>VE6WW</i>.....20,405
<i>W7BSW</i>.....133,152	<i>VE7ZM</i>.....44,781
<i>W8AJW</i>.....121,764	<i>VE8OW</i>.....275
<i>W9OHO</i>.....106,812	

Club Scores

A mighty effort on behalf of the Frankford Radio Club snapped a 7-year winning streak of the Potomac Valley Radio Club, second this time. The FRC crew really worked for their engraved silver-banded gavel, with over 50 per cent of their entries topping the one-hundred thousand mark. With an aggregate score of just under the 5-million peak,

W0EDX, unqualified champ of this portion of the SS, got to the summit scoring 186,880 points, picking up the Minnesota sheepskin on the way. Inside Al's modern shack is a Pacemaker driving a Viking Kilowatt Amplifier on a.m. and sideband. The receiver is a considerably rebuilt 75A1 with over 30 tube functions, all within the receiver cabinet. The knob to the left of the receiver selects individual antenna systems, permits complete band change in less than 30 seconds. The exterior "landscaping"—beams, a vertical, several horizontal, etc.—would gladden the heart of any ham. Note that pole that supports the beams. It weighs three tons!



the Frankford fellows have set a rugged pace for future SS club competitions.

PVRC upped their 1956 total by almost a half-million points, averaging out to about 85,000 points per contestant. Pretty nifty doings with 51 participants!

For the first time, the El-Ray Radio Club of Massachusetts joined the big three. After 4 years in 4th place, the

El-Ray boys may prove pretty tough to dislodge from their newly won third position. The Milwaukee Radio Amateurs' Club made a special effort to climb toward the top and rose from 8th to 4th. The Hamfesters Radio Club of Chicago reported that 30 per cent of the club membership took part. Results are apparent in their climb from 20th to 5th! The Westside Amateur Radio Club of New Orleans rose from

PHONE WINNERS, 24TH A.R.R.L. SWEEPSTAKES CONTEST

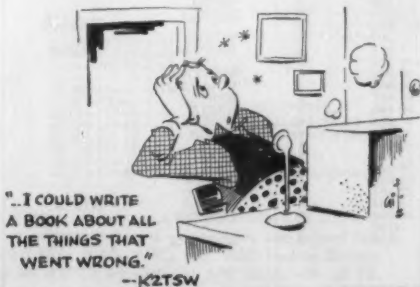
Section	Call	Score	Transmitting Equipment	Receiving Equipment	Bands Used
E. Penna.	W3MDE	84,000	VFO-6L6-807-811	GPR90	40, 20, 15, 10, 6
Md.-Del.-D. C.	W3MSK	104,244	32V1	75A3	75, 40, 20, 15, 10, 2
S. N. J.	K2MPB	84,150	DX100	75A4	75, 40, 15, 10
W. N. Y.	K2BHP	102,900	DX100	NC183D	75, 40, 15, 10
W. Penna.	W3ABW	39,407	DX100	HQ140X	40, 20, 15, 10
Illinois	W9OHO	106,812	DX100	SX100	75, 40, 15
Indiana	K9CLO	71,426	VFO-6AQ5-2E26-4-250A	HR07	75, 40, 20, 15
Wisconsin	W9PQA	83,232	Viking II	NC57B	75, 40, 20, 15, 10
No. Dakota	W0KZZ	49,890	Viking II	S76	75, 40, 20, 15, 10
So. Dakota	W0VQC	105,053	32V2	75A1	75, 40, 20, 15, 10
Minnesota	W0EDX	186,890	Viking Pacemaker KW	75A1 (modified)	75, 40, 20, 15, 10
Arkansas	K5IAX	57,575	DX100	HQ140X	40, 15
Louisiana	W5KC	83,817	32V3	HR07	75, 40, 20, 15, 10
Mississippi	W5DQK	152,643	5100	75A3	75, 40, 20, 15, 10
Tennessee	W4IGW	29,917	DX100	SX42	40, 20, 15, 10
Kentucky	W4KZF	60,481	Ranger	NC300	75, 40, 20, 15, 10
Michigan	K8CPM	52,470	Valiant	RME 4300, DB23	40, 20, 15, 10
Ohio	W8AJW	121,764	32V1; Communicator	HQ120X; Communicator	75, 40, 20, 15, 11, 10, 6
E. N. Y.	K2TCD/2	95,220	Valiant	HQ140X, DB23	75, 40, 20, 15, 10
N. Y. C.-L. I.	K2SGO	58,800	DX100	NC98	40, 20, 15, 10
N. N. J.	W2VCZ	124,830	Ranger; Viking I	NC300	75, 40, 20, 15, 10
Iowa	W0UDO	33,981	5100B	75A4	40, 10
Kansas	W0QMS	49,680	Viking II	75A4	40, 10
Missouri	W0JEE	82,877	Viking II	75A2	40, 20, 15, 10
Nebraska	K0DLL	48,018	DX100	NC300	75, 40, 20, 15, 10
Connecticut	W1YWU	156,366	VFO-Viking I (modified)	75A2; Communicator	160, 75, 40, 20, 15, 11, 10, 2
Maine	W1UOT	27,804	VFO-6AU6-6AQ5-1625s	HQ129X	75, 40, 15
E. Mass.	W10GU	77,880	VFO-6L6-807-8005s	HR05	75, 40, 20, 10
W. Mass.	W1EKO	90,825	32V2; Communicator	NC183; Communicator	75, 40, 20, 15, 11, 10, 6
N. H.	W1FZ	102,711	VFO-Viking I	75A4	75, 40, 20, 15, 10, 6
R. I.	W1BFB	76,527	Ranger-813	75A1	75, 40, 20, 15, 10
Vermont	W7KON/1	1767	Ranger	HQ129X; SX 88	75, 40, 20, 15, 2
Alaska	K1TAWR	27,884	Ranger-Viking KW	75A1	40, 20, 15, 10
Idaho	W7CTZ	56,303	PP 810s	75A1	75, 20, 10
Montana	W7BJV	108,216	Ranger	SX100	75, 40, 15, 10
Oregon	W7OVA	59,400	Viking I	75A1	75, 40, 15, 10
Washington	W7BSW	138,152	Valiant	NC300	75, 40, 20, 15, 10
Hawaii	W4GYX/KH6	64,142	5100	SX71	20, 15, 10
Nevada	W7ZCA	93,000	DX100	SX28	40, 15, 10
Santa Clara V.	W6CBE	81,760	Parallel 4-125As	HR060	75, 40, 20, 15, 10
East Bay	W6PQW	147,864	VFO-6L6-2E26-24Gs	75A4	10
San Francisco	K6HIP	27,735	6AG7-6AG7-6146	NC101X	10
Sacramento V.	W6QIV	89,094	VFO-12BY7-12BY7-6146-813	Super Pro, HF10-20	40, 20, 15, 10
San Joaquin V.	W6ZCC	92,664	DX100	Super Pro	40, 15, 10
No. Carolina	K4KBA	88,128	DX100; Viking II	S76	75, 20, 10
So. Carolina	W4EDQ	53,550	Valiant	75A2	75, 40, 15, 10
Virginia	K4HUU	59,109	DX100	HQ140X, DB23	75, 40, 20, 10
W. Virginia	W8SSA	65,070	DX100	75A4	75, 40, 20, 15, 10
Colorado	W0DGG	59,396	6AG7-6V6-1625s	SX32	40, 20, 15, 10
Utah	W7ZOR	1242	Ranger	SX100	15
New Mexico	W5MYI	121,095	DX100	SX28	40, 20, 15, 10
Alabama	K4LNQ	41,925	DX100	SX99	75, 40, 20, 15, 10
E. Florida	K4CTU	93,130	Viking 500	SX101	40, 20, 15, 10
W. Florida	W5BJZ/4	18,360	6AG7-6AG7-1625s	NC98	40, 20, 10
Georgia	W4FGH	71,264	250THs; 813	HQ129X; SX28	40, 20, 15, 10
West Indies	C03HD	12,226	813	SX28	20, 15
Canal Zone	KZSIF	288	6V6-6146-250TH	S76	20
Los Angeles	K6EVR	170,520	Viking II	75A1; 75A3	40, 20, 15, 10
Arizona	W7CAF	121,440	DX100	NC88	75, 40, 20, 15, 10
San Diego	K6YQC	58,116	Viking I	HQ100	40, 15, 10
Santa Barbara	W6NTF	37,044	DX100; Communicator	NC183D; Communicator	75, 40, 20, 15, 11, 10, 2
No. Texas	W5VU	108,570	32V3	75A3	40, 20, 15, 10
Oklahoma	W5IWL	60,060	VFO-5763-5763-6146-813	NC300	75, 40, 20, 15, 10
So. Texas	K5EDM	87,045	DX100	SX100	40, 20, 15, 10
Quebec	VE2KG	6138	VFO-6V6-807	Marconi R1155	10
Ontario	VE3DVB	34,692	VFO-Viking II	HR050T	40, 20, 15, 10
Manitoba	VE4KX	51,072	32V3	NC300	20, 15, 10
Sask.	VE5ZM	69,294	TB850D	SC77A	20, 15, 10
Alberta	VE6WW	20,405	DX100	HQ129X	75, 40, 20, 15, 10
B. C.	VE7SM	44,781	Viking II	75A4	40, 20, 15, 10
N. W. T.	VE8OW	275	32V3	51J3	15, 10

Inside or out, North Texan W5VU's setup is a beauty. In use during the contest was the versatile 32V3-75A3 combination while 3 and 4 element beams (over 75 feet high) handled the rest.

54th to 35th place and reported they all had fun and that the perennial cry of "wait till next year" was again heard on all sides.

Contest Quotes

"Thought I missed my modest goal of 25,000 points, but after the smoke cleared away I realized I had a 1.5 multiplier so I have 29,000 to beat next year." — *W3IBX*. . . "Surprised myself by just missing 4 sections." — *K0ICS*. . . "Wouldn't it be nice if every contestant would check his clock against WWV just before the start of the SS?" — *W2MQB*. . . "Good conditions both weekends." — *W3BFW*. . . "Special thanks to W6ERB and W7WNI for my 72nd and 73rd multipliers!" — *W1YFU*. . . "Didn't hear W3VKD this year, what happened?" — *W3ABW* (Note: He was on c.w.l.). . . "By the way, where was Utah?" — *K1BBB*. . . "VE1ZE sounded like music from heaven when he answered me for Maritime, my 73rd section." — *W5DQK*. . . "Operating this 4-ring circus at the Egyptian Radio Club isn't all it's cracked up to be." — *K0HEM*, *opr.* of *W9AIU*. . . "I was really enjoying the contest until about three a.m. of the second week end when another North Carolina station gave me a number which was 120 more than mine. This is pretty hard to take at that time of the morning!" — *K4BZJ*. . . "Local QRN on 75 and 40 made operating on these bands extremely difficult." — *W9NZM*. . . "The contest sparked a new spirit of enthusiasm for the club members of Northeastern University." — *W1KBN*. . . "Worked W9VQC who used to be W9VQC." — *W9VQC*. . . "Noted that a lot of the old regulars seemed to be absent this year. Maybe we are due for some new champions." — *W6IWL*. . . "FB Sweepstakes, I wore out the transmit switch in the middle of my 424th QSO!" — *W1DXS*. . . "Funniest QSO was with a K6 who got so excited when he found out I was in West Virginia that he forgot my call, stumbled over his own call and failed to give me a signal report. It seemed I was the first W. Va. station he had ever heard, his last state was WAS, and his 73rd section for the contest!" — *W8SSA*. . . "Sorry I couldn't work all who called and hope to see everyone next year." — *K6JQR*, *opr.* of *KL7AWR*. . . "I was so anxious to make it 5 consecutive years for Oregon and then I completely forgot the first week end!" — *W70VA* (He did it anyway!). . . "Ten meters came through as it has a habit of doing. Wonderful cooperation from the gang on this band." — *W6PQW*. . . "Last section was raised on a CQ Vermont, sheer operating genius! And then there are these characters who respond to a QRZ by giving you call ten times and signing their once, and without benefit of phonetics." — *W8AJW*. . . "Heard Wyoming the first week end, but thought I'd catch one the second week end when they weren't so busy. My mistake." — *W6NXP*. . . "Got my Valiant the day before the second week end. Two minutes before SS time, the high voltage rectifier blew. At 6 o'clock, I sat down and cried. It really happens in the SS!" — *K2ZAU*. . . "It was my first SS and I could write a book about all the things that went wrong." — *K2TSW*. . . "Worked every section I heard



except one, which was a VE8 on 20. 50 watts doesn't go far on that band!" — *K4BCN*. . . "My 220 contacts in 57 sections (and 46 states) prove that NBFM isn't dead yet." — *K2IVB*. . . "A swell contest at this QTH and I was certainly thrilled to have worked all 73." — *W2VCZ*. . . "Worked Montana for my 47th state." — *K2SYB*.

Before you get too far into the following tabulation, why not mark the two week ends preceding Thanksgiving for your attention and participation in the 25th SS. The silver anniversary of the Sweepstakes is sure to be stupendous!

— E. W.

PHONE SCORES

Twenty-Fourth Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . A indicates power up to and including 150 watts (multiplier of 1.5, phone). B over 150 watts (multiplier of 1). . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . Example of listings: W3MDE . . . 84,000-400-70-A-30, or, final score 84,000, number of stations 400, number of sections 70, power factor of 1.5, total operating time 30 hours. . . Multioperator stations are grouped in order of score following single-operator station listings in each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

W3MDE . . . 84,000-400-70-A-30
W3YBI . . . 66,240-320-69-A-37
W3JHM . . . 57,600-300-64-A-13
W3ZIH . . . 57,024-352-54-A-32
W3URU . . . 38,979-213-61-A-9
W3MQC . . . 28,290-205-46-A-19
W3HDI . . . 28,152-190-51-A-13
W3WQE . . . 23,004-142-54-A-28
W3YHU . . . 20,520-152-45-A-19
W3ZSS . . . 20,094-197-51-B-23
W3QJZ . . . 17,286-134-43-A-24
W3RAE . . . 12,488-135-37-A-28
K3ALU . . . 12,144-92-44-A-16
W3GHI . . . 11,340-134-35-A-19
W3PNL . . . 6975-76-31-A-9
W3BNE . . . 6732-66-34-A-8
W3TMN . . . 4929-52-31-A-14
W3JDL . . . 4536-54-28-A-7
W00YS/A . . . 4263-49-29-A-5
W3VTR . . . 3000-40-25-A-9
W3CNO . . . 2457-37-21-A-9
W3BPA . . . 2378-14-4-A-22
W3ZJD . . . 1281-31-14-A-12
W3HIO . . . 975-33-10-A-13
W3FWC . . . 792-22-12-A-5
K3ALD . . . 736-22-11-A-12
W3DQG . . . 378-14-9-A-1
W3AAU . . . 273-13-7-A-5
W3CNG . . . 192-6-9-A-1
W3BRU . . . 168-14-4-A-22
W3EAN . . . 108-6-6-A-1

W3YLL . . . 72-6-4-A-1
W3WRB . . . 45-4-4-A-9
W3EQA . . . 45-15-1-A-1
W3BTR . . . 36-4-3-A-9
W3EBG . . . 21-7-1-A-1
W3GRS . . . 21-7-1-A-1
W3BES . . . 18-6-1-A-1
W3ALB . . . 15-6-1-A-1
W3UBO . . . 12-2-2-A-2
W3YWW . . . 3-1-1-A-1

Md.-Del.-D. C.

W3MRK . . . 104,244-478-73-A-40
W3WQW . . . 97,152-740-06-B-40
W3FEP . . . 88,200-435-07-B-40
W3PQT . . . 55,376-414-67-B-40
W3KDP . . . 33,330-253-06-B-13
W3BFW . . . 32,916-213-52-A-22
W3IBX . . . 29,205-177-55-A-22
W3JPT . . . 27,612-156-50-A-31
W3PKC . . . 12,000-125-48-B-20
W3NNX . . . 8817-83-33-A-12
W3SGP . . . 1488-31-16-A-4
W3MCG . . . 36-9-2-A-2
W3GRF . . . 18-3-2-A-2

Southern New Jersey

K2MPB . . . 84,150-428-66-A-39
W2QKZ . . . 46,215-237-65-A-26
W2BLV . . . 42,570-215-06-A-24
K2BWB . . . 26,814-218-41-A-32
K2BOW . . . 20,458-183-53-B-40
K2ARY . . . 18,868-178-53-B-31

W2WE.....13,800-138-50-B-17
K2EY.....397-51-36-A-23
K2SVL.....3564-50-24-A-3
K2AOL.....3384-47-24-A-12
W2ADA.....1380-30-23-B-5
K2JCU.....384-16-8-A-1

Western New York

K2BHP.....102,300-493-70-A-39
W2VDX.....75,885-385-67-A-38
K2DBB.....27,540-170-54-A-27
W2DXU.....25,110-186-45-A-20
W2MTA/2.....9450-91-35-A-14

W2COB.....8832-64-46-A-13
W2UMS.....790-97-41-B-9
K2BWK.....3444-41-28-A-11
W2JFN.....2952-41-24-A-4
K2QDT.....990-22-16-A-2

Western Pennsylvania

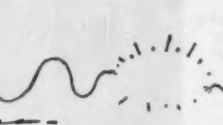
W2ABW.....39,407-210-63-A-32
W3VWJ.....36,300-307-60-B-36
K3ARY.....10,101-91-37-A-23
W3YLT.....5888-53-24-A-2
W3ELK.....12-2-2-A-1

CENTRAL DIVISION

Illinois

W9OHO.....105,812-521-69-A-40
W9AIU.....93,988-470-67-A-40
W9HIM.....89,991-448-69-A-35
W9NZM.....72,720-506-72-B-35
W9FVU.....65,340-330-66-A-30
W9GCM.....60,192-301-66-A-32
W9QXO.....59,904-314-64-A-38
K9EED.....54,090-303-60-A-34
K9ATZ.....53,805-285-63-A-24
W9GLO.....45,694-432-67-B-32
K9CHU.....43,560-251-60-A-33

W9LOF.....36,234-198-61-A-20
W9BRH.....35,037-230-51-A-27
W9WFS.....34,125-163-70-A-27
W9ORH.....32,641-132-47-A-26
W9PNY.....31,590-85-54-A-31
W9NLF.....31,140-173-60-A-40
W9BPJ.....27,477-213-43-A-30
W9PNE.....21,267-141-51-A-14
W9CRK.....19,673-153-43-A-20
W9PRP.....16,581-123-49-A-22
K9DEQ.....13,674-106-70-A-18
W9GVO.....10,098-102-53-A-16
W9PVE.....8,220-80-31-A-24
K9AYW.....7700-110-35-B-16



CLUB SCORES

Club	Score	Valid Entries	C.W. Winner	Phone
Frankford Radio Club	4,985,760	65	W3JNQ	W3MDE
Potomac Valley Radio Club	4,287,698	51	W4KFC	W3MSK
El-Ray Radio Club (Mass.)	1,447,817	44	W1CWX	W1OUG
Milwaukee Radio Amateurs' Club	1,369,688	40	W9DYG	W9PQA
Hamsters Radio Club (Ill.)	972,547	30	W9HRH	W9QXO
Westpark Radiops (Ohio)	971,669	32	W8VTF	W8AJW
Order of Boiled Owls (N. Y.)	663,577	6	W2IWC	W9FVU
Chicago Suburban Radio Assn.	662,805	13	W9WBL	W9FVU
Ohio Valley Amateur Radio Assn.	571,202	9	W8SDJ	W8SDJ
York Radio Club (Ill.)	522,315	3	W9YFV	W9YFV
South Jersey Radio Assn.	488,717	16	W2EXB	W2BLV
Garden State Amateur Radio Assn. (N. J.)	448,134	8	W2OBH	W2OBH
Suffolk County Radio Club (N. Y.)	464,152	14	W2PZE	W2OQI
Sioux City Amateur Radio Club (Iowa)	419,261	5	W9FZO	W9FZO
Central High School Radio Club (Iowa)	411,647	12	W9WDK	W9WDK
Tri-County Radio Assn. (N. J.)	408,644	16	W2EBG	W2EBG
Wisconsin Valley Radio Assn.	395,357	19	W9RQM	W9RQM
Buckeye Shortwave Radio Assn. (Ohio)	387,032	10	W8OYI	W8GKB
Joliet Amateur Radio Society (Ill.)	375,530	7	W9HCL	W9HCL
Lake Success Radio Club (N. Y.)	371,114	11	W2TUK	W2TUK
Citrus Belt Amateur Radio Club (Calif.)	367,473	7	K6GLC	W6IIM
Philadelphia Wireless Assn.	362,236	10	W3HHK	W3YHU
Richmond Amateur Radio Club (Va.)	345,281	9	W4JUQ	K4HUU
Lockport Amateur Radio Assn. (N. Y.)	344,910	6	K2KCE	W2KCE
Nassau Radio Club (N. Y.)	334,564	5	W2IVS	W2IVS
San Antonio Radio Club	327,242	4	W6LGM	W6LGM
Delano Amateur Radio Club (Calif.)	316,568	6	W6BVM	W6BVM
Connecticut Wireless Assn.	315,499	6	W1BIB	W1BIB
Central Michigan Amateur Radio Club	311,253	4	W8DJN	W8DJN
Niagara Radio Club (N. Y.)	298,845	8	W2VJO	W2VJO
Denver Radio Club	285,982	17	W9AZT	K9EVB
Columbus Amateur Radio Assn. (Ohio)	285,683	6	W9WVA	W9WVA
Johnson County Radio Amateur Club (Kans.)	266,820	7	W9WVA	W9WVA
Detroit Amateur Radio Assn.	258,154	11	K8CPR	K8CPR
Westside Amateur Radio Club (La.)	256,915	10	W5RUK	W5RUK
Starved Rock Radio Club (Ill.)	254,679	16	W9ARL	W9ARL
Cuyahoga Falls Radio Club (Ohio)	253,048	4	W3YLL	K2EY
Short Skip Radio Club	220,842	13	W9WME	W9WME
Montrose County Amateur Radio Club (Colo.)	211,695	9	W1CJH	W1CJH
Narragansett Assn. of Amateur Radio Operators (R. I.)	205,455	6	W1CJH	W1CJH
Blue Ridge Amateur Radio Society (Va.)	204,500	6	W4ZKU	W4ZKU
Atlanta Radio Club	197,443	5	K2PRP	K2PRP
Bronx High School of Science Radio Club	197,264	5	K2PHF	K2PHF
Mid-Inland Radio Club (N. Y.)	196,537	5	W2EMW	W2EMW
Syracuse V.H.F. Club	195,153	3	W2HHT	W2HHT
Mohawk Radio Club (N. Y.)	184,700	8	W1SKA	W1SKA
University of Connecticut Amateur Radio Club	182,861	11	W3JSA	W3JSA
Sed Rock Radio Club (Calif.)	180,563	19	W8LVH	W8LVH
North Penn Amateur Radio Club (Penn.)	179,929	7	K2PLF	K2PLF
Springfield Amateur Radio Club (Ohio)	169,072	7	W1PRR	W1PRR
Santa Fe Radio Club	157,389	3	W1TFS	W1TFS
Watchung Valley Radio Club (N. J.)	156,592	9	W9ETV	W9ETV
Frye Amateur Radio Club (Tenn.)	142,026	7	W8AL	W8AL
Framingham Radio Club (Mass.)	138,537	3	K8YJ	K8YJ
South Lyme Beer, Chowder & Propagation Society (Conn.)	137,247	4	W8CCD	W8CCD
St. Louis University Amateur Radio Club	129,048	6	W8AD	W8AD
Kankakee Area Radio Society (Ill.)	124,057	3	W1FWM	W1FWM
Canton Amateur Radio Club (Ohio)	121,246	11	W1GK	W1GK
Long Beach Wireless Operators	115,223	3	W1GK	W1GK
Dayton Amateur Radio Assn.	112,378	7	W1GK	W1GK
Swani Radio Club (Ill.)	111,361	5	W1GK	W1GK
Middlesex Amateur Radio Club (Mass.)	111,309	5	W1GK	W1GK
Hartford County Amateur Radio Assn.	107,404	3	W1GK	W1GK
Tri-State Radio Club (Nebr.)	108,323	3	W1GK	W1GK
Stratford Amateur Radio Club (Conn.)	97,042	8	W1GK	W1GK
South Bay Amateur Radio Society (Calif.)	81,606	7	W1GK	W1GK
Tri-State Amateur Radio Society (Ind.)	72,404	8	W1GK	W1GK
Schenectady Amateur Radio Assn.	59,440	5	W1GK	W1GK
Western Illinois Radio Club	51,451	4	W1GK	W1GK
Amateur Radio Society of C.C.N.Y.	50,213	4	W1GK	W1GK
Bayonne Civil Defense Amateur Radio Club (N. J.)	2,150	2	W1GK	W1GK
Albany Park Amateur Radio Club (Ill.)	41,308	5	W1GK	W1GK
Iowa-Illinois Amateur Radio Club	26,075	3	W1GK	W1GK
Lyons Township High School Radio Club (Ill.)	23,689	4	W1GK	W1GK
Mumford High School Amateur Radio Club (Mich.)	22,404	3	W1GK	W1GK
Brookline High School Radio Club (Mass.)	18,664	6	W1GK	W1GK
Norquembourg Amateur Radio Assn.	18,090	3	W1GK	W1GK
Port City Amateur Radio Club (N. H.)	8102	3	W1GK	W1GK
University of Massachusetts Radio Club	5543	3	W1GK	W1GK

W1EYX, opr.

W9IDA.....	6400-100-32-B-13	K9ELH.....	11,045-100-37-A-14
W9AJI.....	5712-121-24-A-21	W9ZTO.....	9765-105-31-A-
W9YTS.....	5106-74-23-A-8	W9RZD.....	8602-79-37-A-23
W9VQC.....	4164-83-22-A-13	K9CAG.....	8841-64-35-A-9
W9YJL.....	2550-51-25-B-7	W9QGR.....	5400-60-30-A-4
W9BUT.....	2496-48-26-B-8	W9AOW.....	4998-50-34-A-12
W9YYG.....	2139-31-23-A-2	W9NRP.....	4990-75-33-B-8
W9HJN.....	2112-32-22-A-4	W9AMM.....	3645-45-27-A-3
W9AVH.....	2088-44-16-A-7	W9ZPV.....	3300-55-20-A-8
K9ELL.....	2015-39-17-A-9	K9BMQ.....	1783-33-17-A-4
W9FDY.....	1890-30-21-A-6	W9LXV.....	1344-28-16-A-5
W9HWN.....	846-39-15-A-7	W9FZL.....	981-20-16-A-4
K9DEN.....	720-24-10-A-4	W9BTM.....	900-25-12-A-
W9WQO.....	576-27-8-A-9	W9ONY.....	840-24-14-A-6
K9CYZ.....	450-20-8-A-3	K9HFR.....	840-20-14-A-11
K9BAD.....	378-14-14-B-2	W9VHA.....	828-23-12-A-4
W9EHF.....	360-15-8-A-4	W9SIE.....	756-18-14-A-6
W9KPK.....	345-12-10-A-2	W9HCX.....	108-6-6-A-1
W9BYV.....	314-8-A-1	K9CAN.....	108-6-6-B-1
K9AJD.....	312-13-8-A-1	W9UDL.....	90-8-5-A-
W9UJA.....	276-11-7-A-2	W9FDX.....	32-4-4-B-1
W9OTW.....	275-13-11-B-3	K9EUL.....	27-3-3-A-
K9AWK.....	252-14-9-B-		
W9YAC.....	210-14-5-A-3		
W9IRH.....	60-5-4-A-1		
K17CDF.....	27-9-1-A-1		
W9CMK.....	24-6-1-A-2		
K9HNL.....	14-6-1-A-3		
W9HPG.....	15-6-1-A-4		
K9ETC.....	18-6-1-A-5		
W9HIN.....	6-2-1-A-1		
W9EYV.....	3-1-1-A-1		
K9BIA.....	3-1-1-A-1		

DAKOTA DIVISION

North Dakota

W0KZZ.....	49,860-278-60-A-
K9CND.....	48,144-272-59-A-32
W0ZTL.....	33,512-292-59-B-17
W9KLP.....	14,400-125-40-A-6

South Dakota

W9VQC.....	106,053-514-69-A-34
W9WVO.....	94,389-650-73-B-25
W9WUU.....	105-101-28-B-8
K9GWJ (K9J CF GWJ)	390-14-10-A-2

Minnesota

W9EDX.....	186,880-854-73-B-36
W9WVO.....	50,620-384-65-B-25
W9TCF.....	19,415-154-43-A-23
K9IJP.....	14,932-119-42-A-23
W9SCL.....	13,320-111-40-A-28
K9BIT.....	11,400-100-38-A-

DELTA DIVISION

Arkansas

K5IAX.....	57,675-325-59-A-18
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This modest shack was the scene of VE5ZM's QRP conquest of Canadian honors. John's 35-watt was put to good use on 20, 15 and 10, earning him 66,294 points. Diodes for 15 and 20 and a homebrew beam for 10 (favorite band) complete the picture.

Indiana		K5GOE.....	40,955-249-57-A-
K9CLO.....	71,426-503-71-B-31	W5VUE.....	3225-44-25-A-10
W9QAX.....	50,634-291-58-A-39		
W9HLH.....	8613-86-33-A-12		
W9AYV.....	1860-62-10-A-18		
W9SAL.....	1377-27-17-A-1		
Wisconsin			
W9PQA.....	83,232-410-68-A-31		
K9ALP.....	76,248-357-72-A-34		
W9YOX.....	53,277-300-59-A-27		
W9VQC.....	43,164-218-66-A-35		
W9VZP.....	29,580-170-58-A-18		
W9CJO.....	27,090-300-60-A-		
W9GPI.....	22,044-117-44-A-18		
W9JBF.....	19,296-134-48-A-13		
W9SFK.....	18,965-135-47-A-30		
W9EEX.....	16,215-117-47-A-26		
K9BEL.....	12,230-132-31-A-20		
W9GIL.....	11,374-121-47-B-11		

Meet W2VCZ, NNJ winner. A Ranger, Viking I, NC300 and 75A4 in addition to beams galore have also helped Bob acquire DXCC, WAS, WAC, and WBE. Hudson Division honors to W2VCZ by virtue of 570 QSOs with all 73.

June 1958



K4CSY.....	16,770-130-43-A-15
W4TDZ.....	11,908-115-52-B-11
W4OGG.....	3,300-55-20-A-6

HUDSON DIVISION

Eastern New York

K2TCD/2.....	95,220-462-69-A-40
W2SZ.....	11,070-90-41-A-14
K2ZAU.....	6335-11-35-B-14
K2NYM.....	6177-71-29-A-11
W2KRH.....	4091-51-27-A-10
K2CJJ.....	225-13-9-B-4

N. Y. C.-L. I.

K2SCO.....	58,900-300-65-A-33
K2KMA.....	36,648-260-18-A-23
K2MDL.....	34,788-225-52-A-33
W2OQI.....	32,118-202-53-A-24
K2SIF.....	32,076-198-54-A-25
K2TSW.....	31,136-206-51-A-36
W2ZUM.....	27,432-191-48-A-25
K2QZS.....	25,702-204-42-A-23
K2IVB.....	25,080-226-57-B-36
W2MCO.....	24,740-210-58-A-29
K2AAN.....	23,814-163-49-A-12
W2JFU.....	16,448-128-43-A-14
K2UBB.....	16,319-127-43-A-8
K2HYM.....	14,706-115-43-A-11
W2EHC.....	11,322-102-37-A-28
K2GIC.....	10,608-103-34-A-17
W2IYS.....	5,598-70-77-A-15
K2YQC.....	500-53-33-A-
K2GJF.....	4929-55-31-A-13
W2IAW.....	3825-77-25-B-7
W2OIC.....	3036-45-12-A-15
W2MQB.....	2650-53-25-B-4
K2RYC.....	2280-38-20-A-4
W2CIS.....	2250-50-15-A-16
K2UOE.....	1056-22-16-A-3
K2SFR.....	756-28-9-A-6
K2LQU/2.....	528-16-11-A-2
K2MY8.....	495-15-11-A-5
W2JQB.....	405-15-9-A-1
K2AAW.....	216-12-6-A-3
K2IDB.....	21-7-1-A-7
W2Y8I.....	2-2-1-A-2
W2PDU (2 ops)	5478-83-33-A-8
W2NBE (2 ops)	1485-33-15-A-5

Northern New Jersey

W2VCZ.....	124,830-570-73-A-40
K2EYZ.....	39,150-225-58-A-18
W2PEV.....	27,709-177-55-A-29
W2RTG.....	16,234-126-42-A-8
K2DZQ.....	5100-68-30-A-15
K2QFX.....	4650-50-31-A-20
K28YB.....	3948-47-28-A-8
K2GDR.....	649-15-12-A-15
K2YFE.....	528-17-11-A-5
K2VQZ.....	378-14-9-A-
K2LSU.....	105-7-5-A-
K2THR (K2M THR)	8034-106-26-A-10

MIDWEST DIVISION

Iowa

W9UDO.....	33,981-243-47-A-22
W9OBX.....	31,200-260-60-B-36
K9HRX.....	31,180-264-60-B-28
W9MIB.....	30,516-130-58-A-18
K9HFW.....	21,306-213-53-B-29





San Joaquin Valley Section was notably represented by W6ZZC, who scored a sizeable 92,664 points. Earl is active in the Mission Trail Net and Northern California DX Club and holds the presidency of the Delano Amateur Radio Club. In addition to public service awards, W6ZZC has earned WAS, WAC, and DXCC-phone.

W08QN...17,388-161-36-A-12
K0EJU...10,179-87-39-A-18
W0YU...3312-69-24-B-6
W0IWF...2392-52-23-B-6

Kansas
W0QMS...49,680-278-60-A-35
W0MXQ...34,385-192-40-A-20
W0TIV...32,922-188-59-A-21
W0TNR...25,920-218-40-A-16
W0IFR...20,838-151-46-A-13
W0MIF...46-8-3-A-1
K0WBE...24,180-156-52-A-32
W0ERH (W0E GLN IJ)...18,285-133-46-A-14

Missouri
W0JEE...82,877-443-63-A-29
K0CHE...76,176-368-69-A-37
K0ITE...43,524-234-62-A-27
W0BCF...37,440-208-60-A-27
W0BCF...7616-68-56-B-6
K0QZA...4293-53-27-A-6
W0FLN...3506-62-19-A-9
K0CML...3434-56-21-A-7
K0KWB...2760-40-23-A-4
K0RQX...587-18-11-A-4
W0TGI...147-7-7-A-1
W0POV (W0PVI, K0PHN)...21,403-54-B-25
W0QON (4 ops)...7720-102-40-B-13

Nebraska
K0DLL...48,018-304-53-A-27
K0HJW...11,130-106-35-A-4
W0CDL...1575-25-21-A-5

NEW ENGLAND DIVISION

Connecticut
W1YVU...156,360-714-73-A-40
W1EOR...75,050-524-72-B-32
W1BAN...60,882-278-73-A-23
W1YFY...56,985-328-58-A-34
W1LYQ...49,749-361-60-B-28
W1NPT...43,565-296-55-A-28
W1BYX...1023-31-11-A-8
W1AW...819-20-14-A-1
W1HDQ...598-23-13-B-8
W1MDH...857-17-7-A-4
W1DEF...252-14-6-A-5
W1PHR...153-9-6-A-7
W1DHP...144-10-8-A-3
W1DHP...84-7-4-A-1
W1NAJ...83-6-5-A-3
W1DFX...63-5-5-A-2
W1SKA...3-1-1-A-1
K1BEB (W1CDM, K1BEB)...40,730-214-65-A-35
W1LXV (W1E DFX HOI YZY)...3564-50-24-A-7

Maine
W1UOT...27,904-166-56-A-22
K1AET...10,530-39-40-A-14
W1NXX/1...780-20-13-A-2
W1GKJ...12-2-A-2

Eastern Massachusetts
W1OGU...77,880-405-64-A-39
W1GIB...55,428-299-62-A-34
W1PKV...51,423-281-61-A-34
W1JLN...50,660-375-65-B-36
W1JNX...50,508-276-61-A-35
W1EEF...32,428-242-67-B-19
W1OTH...24,812-174-48-A-39
W1UKO...21,600-150-48-A-17
W1BSW...10,947-89-41-A-17
W1WZS...10,800-114-48-B-14
W1KXW...9036-80-38-A-14

W1SNK...5280-55-32-A-6
K4GHC/1...4368-52-28-A-10
W1MEZ...4350-58-25-A-35
W1PAW...3380-73-20-A-9
W1GYZ/1...3360-40-28-A-9
K1BTT...2804-47-21-A-9
K1BAA...2736-61-16-A-10
W1MEG...2160-40-18-A-4
W1AJH...1980-30-22-A-5
W1FQD...459-51-3-A-24
W1MQV...36-4-3-A-1
W1LAV...294-14-7-A-4
W1KIN...60-6-4-A-1
W1VOE...45-5-3-A-2
W1MQV...36-4-3-A-1
W1ETH...3-1-1-A-1
W1KJZ...3-1-1-A-1
W1UBC...3-1-1-A-1
W1AF (W1UGA, K9ABP, K9BIB)

W1KBN (6 ops)...53,130-386-00-B-40
39,402-299-60-B-35

Western Massachusetts
W1EKO...90,825-440-70-A-36
W1DXS...62,444-469-67-B-36
W1LPC...16,275-116-50-A-11
W1DCL...14,699-122-41-A-14
W1HGL...8715-113-35-A-13
K1AED/1...4565-53-35-A-6
W1BKG...800-25-16-B-8

New Hampshire
W1FZ...102,711-470-73-A-35
W1YEZ...14,012-114-41-A-17
W1AOC...2000-40-25-B-6
K6STC/1...720-20-12-A-5
W6JIV/1 (W6JIV, K6SUC, W7KON)
10,212-92-37-A-22
K1FDP (K1N1CJO, W0NDQ)
6690-78-20-A-6

Rhode Island
W1RFB...76,527-388-66-A-23
W1GIF...55,266-303-61-A-22
W1YNE...5328-56-32-A-6
W1HDW...3075-41-25-A-18
W1SRP...1344-32-21-B-8
W1REK...756-25-14-A-8
W1YDH...468-18-13-B-1
K1NHCG...2-1-1-A-6
W1DDD (6 ops)...60,434-451-07-B-39

Vermont
W7KON/1 (W6JIV, K6SUC, W7KON)
1767-31-19-A-6

NORTHWESTERN DIVISION

Alaska
K1TAWR...27,584-254-59-B-39

Idaho
W7CTZ...56,303-467-61-B-28
W7EYR...46,728-265-59-A-21

Montana
W7BJV...105,216-538-64-A-40
W7NPN...90,630-532-57-A-40
W7FIN...54,120-329-55-A-19
W7OIJ...9639-95-34-A-7
W7OVJ...68-5-5-A-1

Oregon
W7OVA...59,400-330-60-A-20
W7ZCX...35,442-270-44-A-21
W7PJK...28,650-285-50-B-16
K7BDK...12,540-116-38-A-19

Washington
W7BSW...133,152-608-73-A-35
W7BLX...100,022-524-64-A-36
W7HJA...42,756-258-56-A-17
W7ZDQ...40,620-288-55-A-21
W7EVS...34,300-231-50-A-30
W7VMR...19,475-134-49-A-19
W7CCY...11,600-107-37-A-11
W7IKK...10,121-87-39-A-6

PACIFIC DIVISION

Hawaii
W4GYX/KH6...64,142-357-61-A-36
KH6IJ...6216-84-37-B-4

Nevada
W7ZCA...93,000-500-62-A-38

San Jose Valley
W6CBE...81,760-560-73-B-37
W6AMH...79,704-404-66-A-28
K6JJK...62,983-327-65-A-24
W6LDO...6736-63-37-A-7
W6VM...768-16-16-A-4

East Bay
W6PQW...147,864-815-61-A-38
W6BSY...121,890-600-65-A-35
K6IIB...15,882-106-49-A-25
K6QHC...332-17-7-A-1

San Francisco
K6HIP...27,735-228-43-A-20
K6EOW...12,155-110-37-A-9
W6ATO...4064-64-32-B-11
K6EKC...2898-42-23-A-8

Sacramento Valley
W6QIV...59,094-482-62-A-33
W6GTG...53,295-295-61-A-31
K6OND...18,740-135-46-A-8
K6SXA...270-10-9-A-1

San Joaquin Valley
W6ZZC...92,664-432-72-A-32
K6OOW...77,184-392-67-A-35
W6ETV...66,144-353-64-A-26
K6GLD...32,550-226-50-A-28
W6ZEK...2673-33-27-A-2

ROANOKE DIVISION

North Carolina
K4KBA...88,128-438-68-A-35
K4BZJ...71,556-356-67-A-38
K4KXT...28,044-165-57-A-35
K4KZZ...20,925-155-45-A-15
W4RRK...3729-58-33-B-6

South Carolina
W4EDQ...63,550-255-70-A-32
W4BAN...19,881-141-47-A-15

Virginia
K4HUU...59,100-325-61-A-38
W4UJV...63,700-450-60-B-35
W4LNX...42,000-201-70-A-27
K4HFR...31,407-184-58-A-33
W4KMS...30,960-172-60-A-25
W4ZZV...29,498-173-67-A-34
K4ETQ...29,205-165-59-A-25
K4LFR...22,512-201-50-B-22
W4KAO...11,872-112-53-B-18
K4LUA...8241-67-41-A-18
K4IKH...7098-85-29-A-13
W4UJ...6534-62-36-A-6
W4WIN...5406-53-34-A-12
K4DWS...2880-40-24-A-9
W4OOL...824-16-13-A-8
W4WSE...600-25-16-A-7
W4KFC...21-7-1-A-1

West Virginia
W8UME...48,852-236-60-A-40
W8SSA...37,422-337-58-A-18
K8CSG...17,824-117-51-A-10
W8IXG...288-12-8-A-1

ROCKY MOUNTAIN DIVISION

Colorado
W0DGO...59,396-305-67-A-28
K0EBV...37,422-231-54-A-18
W0EYQ...28,228-186-51-A-33

W0BWJ...26,880-160-56-A-13
W0CYT...21,099-149-47-A-4
W0NWW...18,060-210-46-B-11
W0CQY...10,800-121-45-B-11
K0EJC...7559-75-34-A-18
K0DCW...5148-67-26-A-11
W0ZPU...2618-39-23-A-6
K0KPV...819-20-14-A-5
K0ITX...702-22-12-A-3
K0BCQ...588-14-14-A-4
K0ALH...420-14-10-A-9
W0TVB...240-15-8-B-2
K0BCR...168-8-7-A-4
W0YQ (9 ops)...130,065-667-65-A-38

Utah
W7ZOR...1242-23-18-A-5

New Mexico
W5MYL...121,095-594-69-A-40
W5KQY...71,400-518-70-B-33
W5FHL...36,288-250-49-A-22
W5UNB...6-2-1-A-1

SOUTHEASTERN DIVISION

Alabama
K4LNQ...41,925-216-65-A-33

Eastern Florida
K4CTU...93,130-700-67-B-35
W4HKJ...60,756-334-61-A-22
K4RUC...57,000-300-64-A-29
K4KQV...41,910-256-65-A-22
K4KJV...36,338-214-57-A-13
K4RWX...21,900-147-50-A-11
K4IZL...10,248-123-42-B-8
K4XNG...1354-28-16-A-1

Western Florida
W5RJB...18,360-136-45-A-28
W4HIZ...6912-72-48-B-9
K4CEF...5280-80-33-B-5

Georgia
W4FGH...71,204-524-68-B-33
W4MOB...25,380-235-54-B-26
K4HIG...12,987-117-37-A-26

West Indies
C0SHD...12,226-104-39-A-12

Canal Zone
KZ5IF...288-16-9-B-1

SOUTHWESTERN DIVISION

Los Angeles
K6EVR...170,520-816-70-A-36
K6BWD...129,384-600-72-A-31
W6IIM...106,128-529-67-A-39
K6LOM...70,737-329-73-A-34
K6INU...63,024-406-52-A-22
K6IUL...61,752-334-62-A-33
W6EIG...58,500-308-64-A-40
K6YJG...52,865-189-43-A-12
K6OVN...33,275-102-45-B-16
K6JAM...12,360-106-40-A-13
W6WOV...12,120-102-40-A-10
K6DDJ...10,455-85-41-A-16
K6TAN...3606-46-26-A-4
K6KOC...8775-65-45-A-12
K6TRC...4200-71-20-A-14
K6YLB...3606-46-26-A-4
W6HUH...3432-52-22-A-4
K6QEH...36-5-4-B-5
K6ICQ/6...24-4-2-A-1
K6YXB...3-2-A-1
K6ICS (K6E ICQ ICS)
62,100-306-69-A-35
K6RMD (K6E RMB RMD, W6UQO)...20,880-145-48-A-31

Arizona
W7CAF...121,440-645-64-A-39
W7CRP...37,422-337-58-A-18
W7ZIW...69,550-366-57-A-39
W1ZVG/7...51,480-331-82-A-19
W7ENA...34,156-207-55-A-15
W7WPD...12,720-106-40-B-16
W7UXS...12,150-101-40-A-21
W7CDJ...588-18-14-A-3

San Diego
K6YQC...58,116-337-58-A-32

(Continued on page 158)

Strays

The National Bureau of Standards, Central Radio Propagation Laboratory, desires applications from qualified persons interested in operating upper atmosphere scientific recording equipment at Antarctic stations during 1959. Application on Standard Form 57, obtainable at local post offices, should be submitted immediately to Section 82.10, National Bureau of Standards, Boulder, Colo. Applicants should have a degree in electrical engineering or physics, with two or more years practical experience in electronics — or — two years technical education leading to an engineering or physics degree, plus four years practical experience in electronics. The practical experience can include active amateur radio experience. Appointments will be made in grades GS-9 to GS-12, salary range from \$6250 to \$8645 per annum, plus 25% ice differential. Training will commence during July, 1958. Personnel will leave for Antarctica during October or November, 1958, and return to the U. S. in January or February, 1960.

The U. S. Civil Service Commission is looking for electronic technicians to fill a number of posts in this country and abroad, for installation, maintenance, research and development. Salaries range from \$3175 to \$7570. Applications should be made on Form 5001-ABC, which is available from any post office or civil service regional office.

If you'll check back to page 38 of *QST* for March, 1958, you'll find mention of high-altitude nuclear bomb tests and their possible effects on propagation. This is just a reminder, as the bomb tests are now in progress.

The Arizona Amateur Radio Club has achieved the distinction of being named a member of the United States Auto Club as expression of gratitude for the work the club has done in providing communications at the big car and stock car races in Phoenix. The club brings in its mobile stations and provides track communications so that the races may be controlled better during emergencies. The hams also report the apparent condition of the cars as they roll past — helping to cut down the accident rate.

Those who struggled through the small print in last month's C.W. Sweepstakes results may remember this statement: "Kids were plunging en masse into their first contest but were any younger than 12-year-old KN6DJC?" Michigan's KN8HLR and East Massachusetts' W1NJL advise they were tied at age 11 the first week end, although NJL's twelfth birthday fell on November 12 before the second period. Any more challengers for youngest SSer? . . . Reading the part about "the three ambidextrous types we know of who transmit and write simultaneously," K9ELT lays claim to being number four, "but it ain't easy," says Phil.

DX Contest High Claimed Phone Scores

Here are scores claimed by phone entrants in the 24th ARRL International DX Competition held last February and March, with score, multiplier, and QSO total shown in that order.

Single Operator				W8AJW			
W8BKP	280,200	225	424	W5KC	74,763	117	213
W1ONK	258,780	190	454	K4QVK	71,868	113	212
W3DHM	220,584	182	404	W3DRD	70,902	117	202
W6ITA	225,077	171	429	W4EFX	68,145	105	217
W4OM	216,216	182	396	W5ALB	64,800	90	240
W8NFX	210,684	194	362	W3KDD	63,036	103	204
W8NWO	196,944	176	373	W4IAX	62,493	111	189
W9EWC	190,576	172	370	W9GIL	60,480	112	180
W2WZ	180,851	167	361	W3KT	56,358	93	202
VE3CCK	165,789	169	329	W5DQK	54,900	100	183
W8ZOK	163,680	155	352	K4CTU	54,036	114	158
W3ALB	156,843	157	333	K2OPJ	53,010	93	190
W1QWT	140,840	140	336	Multiple Operator			
W3ECR	136,320	160	284	W3AOH	308,940	190	542
W1FZ	134,368	136	330	W3VKD	267,699	181	493
W1BIH	129,297	141	309	W6AM	238,266	186	429
W6AED	122,715	135	303	W8NGO	222,855	179	415
W8SDD	109,980	130	262	W6NJU	148,260	140	353
W1GET	103,750	125	264	W3FYS	122,265	143	285
W3IYE	99,144	136	243	W3BES	120,984	142	284
W9CEK	97,333	131	251	W3FQK	114,750	125	306
W4NBV	92,136	132	234	W3CGS	93,330	122	255
VE5VL	91,390	130	237	W1RIH	68,742	114	201
W1JCX	86,961	123	237				

Single Operator				Multiple Operator			
KH6IJ	545,751	87	2091	XE1RE	46,110	53	290
DL4AAP	185,814	54	1147	VQ4FK	43,344	28	516
G3HCL	139,722	58	965	G2ACC	35,890	37	424
ON4OC	136,890	63	728	DL4YE	35,532	28	323
VP3HAG	135,040	64	704	O22IF	34,142	43	268
CO2USA	131,580	68	659	DL4OU	31,314	34	309
DJ1BZ	112,992	18	794	11ZFT	26,358	23	382
T12OE	107,916	46	782	OQ5DG	22,836	22	347
G3DO	100,944	48	701	CO3HD	22,680	27	280
G3HJJ	95,628	52	619	VR2BC	22,275	25	297
EA8CF	93,891	51	615	OA4V	22,032	34	217
EA3JE	90,993	49	625	PA0VB	18,600	31	230
OA4AO	81,510	55	494	VK5XN	18,090	18	335
ZL1MQ	79,980	62	430	VP4LO	17,010	21	227
KA2RB	70,980	39	610	CX1AK	16,925	25	270
HK7LX	60,021	39	517	GM6IZ	13,770	15	306
OD5BZ	59,459	37	536	K2LL	12,750	25	170
ZE2KR	58,302	41	476	CR4AS	12,600	25	168
E1SL	55,440	40	462	LA4HP	12,267	29	141
G2DYV	54,810	42	435	F7BX	10,149	17	199
G2PU	53,808	50	304	PA0ZJ	10,035	15	223
OH5PE	50,055	47	355				
CO2HB	50,028	44	379	KX6AF	117,183	53	737

A preview of high c.w. totals is slated for next month's *QST*.

KN8HTI and KN8ITH sit next to each other in school.

W3VKD, of the *Ham Register*, is also quite a statistician. He examined the May issue of *QST* very carefully, and came up with the information that the word "Ham" had been used 160 times in that issue.

K9ISP says that K9JIN was his first QSO as a Novice, his last QSO as a Novice, and his first QSO as a General — none of this by prearrangement.



The base of Almirante Brown (LU1ZE, LU6ZS) perched on the rocky shore of Palmer Peninsula, is shown at the left, while at the right is the Chilean Navel base of Arturo Prat (CE9s AT, AU, AV) on Greenwich Island, South Shetlands.

I WAS one of the many fortunate individuals to get to Antarctica because of the increased activity during the IGY. An invitation by the Argentine Navy to join the 1957-58 Argentine Antarctic Expedition was accepted in order to conduct a bacteriological study on Antarctic birds. Unfortunately, the short time between invitation and expedition did not allow time to procure portable ham equipment or to secure permission for amateur operation. A week in Buenos Aires was completely occupied with the setting up of a laboratory on the icebreaker *Gral San Martin*. The first day at sea permission was obtained from the skipper, Capitan R. A. Capurro, to operate the ship's gear using the call LU2DEE/MM of Petty Officer Hugo Vacis. During the trip to the Antarctic a few 20 meter c.w. contacts were made.

During the three-month trip opportunities to go ashore to collect birds took me to American, Argentine, British and Chilean bases and gave

me a chance to see the rigs and talk to the operators. Among the stops made were the Palmer Peninsula bases of "Esperanza" at Hope Bay (LU6ZV) and "Almirante Brown" on the Danco Coast (LU1ZE, LU6ZS). Bases visited in the South Shetland Islands were "Teniente Camara" on Half Moon Island (LU's 1ZS, 2ZS, and 1ZT) and "Arturo Prat" on Greenwich Island (CE9's AT, AU and AV). The South Orkney base of "Orcadas" on Laurie Island has the call LU1ZA. Bases visited on the Weddell Sea shelf ice were "Gral Belgrano" (LU's 4ZX, 5ZX, 8ZW), "Ellsworth" (KC4USW) and "Halley Bay" (VP8's CL, CK, and CY). The rarest DX spots visited were the uninhabited South Sandwich Islands of Zavodovski which has a live volcano and a Russian house on it and Southern Thule which was the site of LU2ZY's DXpedition.¹

The Argentine, British and Chilean bases use the regular communications equipment for amateur work between traffic skeds when the bands are open. At Halley Bay the only free time is from 18 to 43 minutes past the hour — these boys will never make RCC. The transmitting and receiving equipment was different at most bases. For example at "Teniente Camara" the transmitters were Argentine Navy 40 watt A3, 100 watt A1 jobs with U. S. war surplus receivers; BC-610s and HRO-5 TAl's at "Gral Belgrano"; Collins Gear at "Orcadas" and a new GPT-750 with HRO-60s at "Arturo Prat." Despite the age or the power of the rigs they really put out, probably because of large rhombic antennas at most of the stations. The Argentine and Chilean bases, like the American bases, are military operated (mainly Navy) and certain calls are assigned to each base. In the case of the Argentine bases one call is usually used by the base, and others are assigned to the radio operators and commanders who request a separate call. Most operation at these bases is on the 20

* 213 Fairview Avenue, Blacksburg, Virginia.

¹ Ahumada, "South Sandwich DXpedition", QST, June 1956.

Amateur Activity in the South American Quadrant of Antarctica

BY
JOHN McNEILL SIEBURTH* K4MKN

meter band and most stateside contacts are on c.w. due to the rudimentary English of the majority of the operators. The Chilean bases have separate calls for the c.o., exec and the enlisted men. At the British bases, which are civilian run, it is an individual matter with those who qualify getting VP8 calls. The American bases have one call only and the ham shack with separate Collins gear is operated mainly by the off-duty radio operators. Amateur activity in the Antarctic is primarily for radio contact home for morale purposes. Many of the operators have never had their own call or even been previously interested in amateur radio and are operating with special temporary licenses. The few who are dyed-in-the-wool hams are doing a good job at hamming for hamming's sake, new states, new certificates, etc.

Besides the few 20 meter c.w. contacts made from the *San Martin I* had two opportunities for operation ashore. At "Gral Belgrano" a few 20 meter phone contacts were made using the call LU5ZX. I was fortunate in being able to stay at

"Teniente Camara" on Half Moon Island in the South Shetlands from December 25 to January 3 in order to collect specimens. The c.o. and radio operators were very kind in giving me the freedom of the radio shack between traffic schedules to operate LU1ZS. The first four nights were spent on the 20 meter c.w. band until I found out with W7HTB's help that 40 watts A3 input to a rhombic could get a 5 by 9 signal stateside. Amateurs from Hawaii (KH6OR) to Poland (SP8CK) and as far north as the Arctic Circle (VE8NW) were worked. In all 33 c.w. and 83 phone contacts were made. This operation as well as meeting personally with the ham operators at the various bases was a big thrill for me. Hams worked from more than one location were W3ROA, W4EPA, and W5JUE. These FB amateurs as well as W2HBV, W4UKA, W4ROK, K4CKZ, K4INN, W5VU, W8GZL and VE7JB did a wonderful job in keeping my XYL and parents supplied with messages and Christmas and birthday greetings.

Strays

K6OKF got a complaint from a neighbor who couldn't hear him on the TV set. Seems that the neighbor *liked* to hear K6OKF because he thought the ham conversations were more interesting than the TV programs. — K6USI

W9ZZU, Illinois district commander of U. S. submarine veterans of WWII, announces that another reunion will be held at St. Louis, Mo., on August 14-17, and he hopes that more ham veterans of the subs will be able to attend.

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W3AXT reports a real weird one overheard on a marine telephone channel. The marine operator was having trouble reading the boat, and so she said, "I am not reading you so good just now, sir. Will you please try to come in a little clearer." (If this works we sure gotta try it on some of the 14 Mc. stuff we've been having difficulty with lately!)

W2BR tried to reach K2VOS on the telephone at his office, but was told that K2VOS was out of town. So W2BR turned on his rig to do a little hamming. And who do you suppose he heard and worked right away?

KN3DHX, KN8HLR and K8CPR are all named Bob Epstein. Any other hams having this name might drop a note to KN3DHX at 2803 Jenkintown Rd., Ardley, Pa.

Silent Keys

It is with deep regret that we record the passing of these amateurs:

W1KML, Steve Dudas, Bridgeport, Conn.
W1RTG, Eli Crumb, Norwich, Conn.
W2BZL, Charles Kerr, Baldwin, N. Y.
W2CXV, Fred M. Maude, Fulton, N. Y.
W2DXT, Milo B. Atkinson, Tuchahoe, N. Y.
W2ISO, Ainsley A. Carson, New York, N. Y.
W2PAG, Joseph A. Gaetane, Flushing, N. Y.
ex-W3LG, Henry R. Lyon, Hyattsville, Md.
W3TCD, James C. Everingham, Selinsgrove, Pa.
W4BLE, William G. Beverly, Norton, Va.
K4CPG, Charles W. Roberts, Birmingham, Ala.
W4DD, Stephen J. Buckley, jr., Birmingham, Ala.
W5AKY, Elbert A. Allen, Pass Christian, Miss.
K5BOP, Rolen P. Woods, Oklahoma City, Okla.
W6AK, Loyal D. Mealer, Walnut Grove, Calif.
K6DM, Clyde C. Anderson, San Mateo, Calif.
W7DYH, Albert J. Wade, Bremerton, Wash.
W7JPK, Edward P. Arildson, Millwood, Wash.
W7JQK, Neville E. Walker, Portland, Ore.
W7KJ, Kenneth R. Jones, Boise, Idaho
W7KKZ, Cecil V. Thomas, Seattle, Wash.
W7QVX, Alfred J. Hobbie, Arco, Idaho
K8GEL, Miri Garrod, East Palestine, Ohio
W8VFP, Dale L. Townsend, Miamisburg, Ohio
W9IYP, Donald R. Larimer, Burlington, Wis.
W9UGI, Arthur L. Harris, Beardstown, Ill.
KN8LBI, George F. Smalley, Wichita, Kans.
W8SYM, Herbert W. Jones, Omaha, Nebr.
VE1SL, George LeBlanc, Dieppe, N. B.
VE3BGK, Charles Hall, Kirkland Lake, Ont.
XE1VA, Jose Polak, Mexico, D. F.

Working WLP

(Without Landlord's Permission)

BY EDWARD L. HAYDEN,* K2TFV

THE IDEA for the WLP award occurred to me through a series of unnatural events which began by my moving into a New York City apartment. To qualify, you must simply work WAS, WAC or DXCC, have a confirmation for each contact, then get your landlord to verify that each contact was made without his permission. This will make you eligible for the difficult WLP award.

Being a small town boy, my object in becoming a ham was for relaxation and diversion. The strain of working completely relaxed in the casual atmosphere of the big town left me something less than that at the end of the day. When a friend, W2JSL, suggested ham radio as a means of enjoying life, I readily embraced the suggestion. My wife, now the XYL, of course, concurred, lest I get that unloved look so prevalent among some whose wives won't let them become hams.

In due time I received my license and brand-new call letters and arranged my equipment, a newly acquired SX96 and an ancient crystal-controlled 40-watt transmitter, in the corner of the bedroom.

I started thinking about an antenna, and it was then that I became aware that the existence of the landlord had more significance than merely that of collecting the rent.

"Honey," came the XYL's voice from the department of documents, "did you read the small print in the lease? . . . outside antennas, herewith and specifically forbidden . . . no electrical installations without express permission of the landlord."

Thus I assumed my cloak-and-dagger personality, since it was now apparent that I would have to operate surreptitiously. With this in mind, before setting up Occupation Undercover, I dispatched the XYL and jr. ops. to do some reconnoitering in what can now only be classified as enemy territory.

The jr. ops. came back with only one bit of advice—give up and buy a larger TV set. The XYL reported that we were, indeed, surrounded. There were literally hundreds of apartments around us, a solid front of entrenched TV addicts, all of whom suffer painful withdrawal symptoms should TV be taken from them.

Recently an harassed TV repairman barely escaped with his life when he attempted to remove a set to his shop for alignment. He was beset by hysterical kids, a raving mother and a mad family dog. They would fight from the rooftops, if need be.

One neighbor, it was discovered, was continuing to watch TV through dark glasses even though

* 68-43 Cloverdale Blvd., Bayside 64, L. I., New York.



his doctor had diagnosed embryonic carcinoma of the eyeballs due to excessive kinescope radiation.

I learned that one ham actually did try to operate but was readily discovered and exiled to operating mobile only. The neighbors were unmoved, though, even at the sight of his XYL trudging out on a bitterly cold winter's night carrying hot coffee through the snow to her OM while he operated mobile at the curb.

My head was bloody but unbowed, so late one night I strung about 60 feet of number 20 wire out the bedroom window and attached it to the end of a clothes line pole, with the thought in mind of removing it before dawn. I didn't even get a chance to load it up; a drunken neighbor, staggering home from an office party, caught the low end of my invisible antenna with his head and snapped it—the antenna, that is. (I found out through the grapevine that he roundly thrashed his wife for setting a booby trap for him that night.)



When the XYL saw my frustration over this antenna problem, she solved it with one of her choice statements. "If you can't put it on the roof, put it under the roof." Which, of course, was the answer. I fed the thin wire up through the ceiling and around the crawl space under the roof in somewhat the shape of a pig's tail and loaded it up on 40 meters.

I then commenced my calling marathon. I called CQ for a solid week. I called CQ so often that my right hand kept moving after I went to sleep at night. Then it happened, I got an answer. W3MHO down in Pennsylvania answered.

I broke into a cold sweat and froze. My hand would no longer move, and my impulse was to shut down the transmitter and hide in a closet; but I got control of myself and completed my first QSO.

It was lovely, a wonderful lift. I approached my job that following day with a fresh new outlook.

That evening the XYL gave me the news that poked a few holes in my fresh new outlook. Our neighbors had called in the landlord to check and attempt to find the source of what they referred to as a very peculiar click, click, clicking noise coming from the ceiling. Faulty wiring was ruled out, but the possibility of poltergeists was considered. If the noise continued, the landlord advised them, an expert from the National Ghost Society could be called in to investigate.

I had not considered the noise problem before, but it was quite true that the noise from the manual key was greatly amplified at night, not to mention the noise from the heavy toggle switches on the old transmitter. I had kept the power down to approximately 40 watts to prevent TVI. Even though rabbit-ear antennas were being used, there were hundreds of them grouped around. I had something of the same feeling when the ammunition ship I was on during World War II got lost in a mine field.

It was now clear that a few more rules would be required if my survival as a ham was to be insured. I could not be concerned with tropospheric and ionospheric scatter or gamma-match antenna systems or the s.w.r. or the effect of source beam width on stacking. My challenge was to outwit the landlord. I jotted down a few basic rules that I felt would be essential to this end.

1. Operate only during the hours when TV is off or at a minimum.
2. Use a bug and operate it from an insulated box.
3. Eliminate toggle switches.
4. Use c.w. and earphones only.
5. Use minimum power.
6. Keep curtains pulled at all times.
7. Buy a sunlamp.

While waiting for my bug a new development created a temporary deterrent to my project: the QSL card. W3MHO came through with my first card, and I viewed it with mixed emotions. All mail for our apartment is thrown into a com-

mon hallway where each tenant thumbs through it, picking out his own. Needless to say QSL cards would attract attention. In fact this first card was picked up by a neighbor and handed to my wife with the remark that it was a "funny-looking postcard." She is probably still wondering what BCNU AGN means.

However, with the arrival of my bug I started operating again, and the XYL met the mailman at the door and quickly screened out the QSLs. Then at Christmas, with no ulterior thought in mind, we gave the mailman a carton of his favorite cigarettes. Thereafter, the QSLs were pushed under our door, a service unknown in this area.

After several months of late hours, bleary-eyed operating, I had managed to work about 20 states and one Canadian, VE3EHM. Each new contact was like picking pearls from an oyster, but it was approaching hard work. My original reason, relaxation and diversion, for becoming a ham was only half fulfilled, plenty of diversion, no relaxation.



I ran across an ad for the new Viking Navigator about this time, so I called up Mel and asked him to send one out. It is a compact little transmitter/exciter with a built-in v.f.o., band-switching, time sequence keying and 40 watts input on c.w., and it should be ideal for my needs. It was. I may be criticized for not building my own equipment, but the space problem in some of these New York apartments is critical. I would be afraid to fire a soldering iron for fear that I would overheat the apartment. I could lie in bed and operate the rig with my feet if I had a mind to.

I removed my pig's-tail 40-meter antenna and replaced it with a 15-meter doublet in the same area under the roof, running it just over the cross beams and about 6 inches from the master TV antenna, which, fortunately was not connected. I used 72-ohm coax for the transmission line, and secured everything with masking tape. The hotwater radiator was my ground. I found that by cutting the radiator on or off I could vary the loading of the antenna.

With my new antenna and 40-watt Navigator I started working out on 10 and 15 meters. I was astounded at my success. In quick order I worked

(Continued on page 168)



Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

N.S.B. COMMENTS

1110 Magnolia Avenue
Panama City, Florida

Editor, *QST*:

This is just a line to let you know how informative I found your article in *QST* on n.s.b. I experimented and found that it is actually all that the author claims and he is to be congratulated on his observations. Certainly, though, it is so complicated that he must have had to have some assistance to arrive at the facts stated here.

I have been experimenting with this mode of transmission since I received my Novice ticket and I was just waiting for someone to write about it. Thanks for a fine article.

— Bart Fay, K4CEF

2018 Lowell Road
Everett, Washington

Editor, *QST*:

Congrats to Mr. Pickering, W9LRA, for a very fine article which I read with deep interest. Mr. Rapp, sir, look to your laurels: this guy is out for the title.

— John Habenicht, W7QLH



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— K2BZC

9 Baldwin Road
Noxon, New Jersey

Editor, *QST*:

I found Mr. Pickering's article on n.s.b. very interesting and informative and I certainly hope n.s.b. will become more popular. However, in our two years of experience my colleagues and I have found "no sideband suppressed carrier" to be the ultimate in QRM elimination. Perhaps an article on this mode would be in order.

Also, three cheers for *QST*'s more informal presentation of material! Articles such as Mr. Pickering's and Mr. Rapp's provide a delightful change from the usual technical and constructional articles and a little humor between lines in all the articles would certainly add to the enjoyment of the magazine.

— Ronald Lee, K2SYB

2000 Maple Road
Buffalo 21, New York

Editor, *QST*:

The merits of the n.s.b. system proposed by W9LRA will be instantly recognized by all forward looking hams.

However, I would like to point out to Mr. Pickering that his idea has already been patented. On April 13, 1948, the United States Patent Office granted patent number 2,439,661 to Donald B. Keever of Colfax, N. C. This patent states that the "object of the invention is to reduce the channel width required for the transmission of an amplitude modulated wave . . . by the substantially complete elimination of side bands leaving only a wave of varying amplitude and single constant frequency." This classic patent presents an actual schematic diagram for the production of n.s.b.

It is a sad indication of our scientific lethargy that this idea was not instantly utilized by hams, commercial stations, and the military services when it was first proposed over ten years ago.

— Robert A. Hunting, K2LYZ

R.D. 2, Blanche Avenue
Elyria, Ohio

Editor, *QST*:

At the risk of being considered selfish, may I say that I am disgusted that W9LRA has seen fit to divulge information regarding n.s.b. emission.

Those of us who have had some part in developing n.s.b. to its present state of perfection have enjoyed its advantages in relative privacy thus far. Often when it is impossible to punch through on a.m., d.s.b., and even a.s.b., we often find it possible not only to get through, but to enjoy solid 100% QSOs on n.s.b.

We therefore ask you to refrain from publishing further details regarding this system. If others wish to join our group, and to enjoy its advantages, let them develop the necessary proficiency and ability in its use as we have — the hard way. In that way you can help to raise the level of the "state of the amateur art," so to speak.

— Bill Wildenhein, W8YFB

DX CHASERS

Seaford, New York

Editor, *QST*:

The art of DX at one time was an extremely pleasant hobby from which much enjoyment was derived for many amateurs throughout the world. However, the picture has changed considerably of late and pleasure has turned to bitterness. The amateurs out in the remote spots are bitter because they cannot talk to whom they wish at their leisure due to the hungry DXers completely ignoring all ethics of being gentlemen and good radio amateur operators. This has either driven the rare ones completely off the air or into hiding on bands at times when they cannot be constantly annoyed by the pack. It results in the DXers spending altogether too much of their time hunting the now-in-hiding rare ones down — time which should be spent with their families or in business or studying for the future welfare. Those that cannot afford it spend past their means for equipment so when the rare one does take a chance and come on the air he can be first to work him before the DX station gives up in disgust.

True, if the DX station is interested in working as many Ws as he can, and can afford to QSL, there is no problem. However, it is the right of the DX station to make this decision and operate as he sees fit. The competitive angle of the DXCC in this day and age does not permit him to do this.

We are becoming less mannerly as time goes on, and so must the newcomers as they blossom out — so the only

answer seems to be eliminate some of the tension. Restrict DXCC to an award for working one hundred countries. This will not eliminate the sport for the many but will do away with the tensions now created by the DXers today fighting for the last few new ones. It will give back to the fellows who happen to live in the rare spots a more even chance to enjoy our hobby as was intended.

— Aug. Nickel, W2HMJ

NUISANCE . . .

20 Sickles Street
New York 40, New York

Editor, QST:

With all due respects to those who conceived the idea, I think it is about time that we all came to the realization that the creation of the "do-it-yourself" class of license (Novice, Technician) is a mistake that must be corrected immediately. I believe that when it becomes possible for a 10-year-old boy to get a license to operate a radio station and then convince all of the "Video Rangers" around his vicinity to get one too, in the space of a week, that the state of the art has sunk to its lowest depths.

The Novice is responsible for innumerable tortures suffered by all general class operators on most any of the bands. The "break-break-break-break" and the second and third harmonics accompanied by the chirps and clicks of a newly hatched Novice are only a few. This is in addition to fact that this horrid class of license has caused our ranks to more than double in a very short time. The time has come when the ham is no longer the exception, but rather those who don't have a ticket are the out of place ones. Too bad!

This situation must be corrected at once if we expect to enjoy ham radio in the future. No more Novices, no more cheating on mail exams, and no more Captain Video on the ham bands equal a decent hobby.

— Henry Klapholz, K2VBL

Columbia, South Carolina

Editor, QST:

I would like to register a complaint regarding Novice c.w. width on the 15-meter band. The 150 kc. of Novice c.w. on this band is entirely too much. It is ruining the foreign phone DX on this band and I feel that a change is needed. I have talked to numerous W stations regarding this condition and find them all feeling the same way as I do.

I believe a fair arrangement would be to limit Novice c.w. operation to 21,100 to 21,200 kc. which would leave at least 50 kc. for the DX phone stations. If you can't do anything with FCC about the change, perhaps appealing to the Novice operators to refrain from using 21,200 to 21,250 kc. would help some.

— R. D. Mitchell, W4EDQ

. . . OR NECESSITY?

1606 West Sixth
Hastings, Nebraska

Editor, QST:

Any cause that expects to perpetuate itself needs a constant influx of new blood, and ham radio is no exception. Our Novices need all the encouragement we can give them. Instead of making QRM worse by narrowing the bands available to them, let's widen them out a bit. Instead of feeling sorry for the poor DX chaser on 15 meters, shed a tear or two for the Novice still shaky about copying code, trying to pick up a new state or two in a band full of phone signals. This from a ham of two decades of experience.

— C. B. Wolfe, W0LJO

PERPLEXED

202 Howard Street
Bellevue, Ohio

Editor, QST:

My Novice ticket arrived early in January, and I have been having a ball ever since, but there is one thorn in the whole deal. On fifteen meters I hear some swell DX and have tried four of five antennas but to no avail; either they don't hear me or I just don't get out to them.

Shortly after my first few futile attempts to work that

band, I asked six or seven nearby hams (both Generals and Advanced) to pay a visit and see what they could do on my rig (DX 35, or DX 20, or Adventurer) and find the fault, either with the operator or the equipment. It is said if you can't hear them you can't work them. I can hear aads of DX hams, and can't work them. Surely it can't be the rig — it must be the antenna, but how am I to tell, since not even one of the worthy brothers has seen fit to visit only for a few minutes. I wonder what a fellow has to do or pay for one of the fellows to lend a helping hand?

— M. L. Braun, KN8IBQ

DAHHDIDIDIDIT

Box 1261 C.B.S.
New Smyrna Beach, Florida

Editor, QST:

Received reprint of "Your Novice Accent" in the morning mail. There certainly is a tremendous amount of truth in those four pages.

My vote for number one Lid-of-the-Month is cast for the character who tries to use a bug without lots of practice on an oscillator. I have heard five, six and seven dots used for H, and since when is the letter C dahhdidididit? I heard CQ being sent just that way this evening.

Funny how different the code sounds on one of those things. I firmly believe it would be to the advantage of all concerned if the FCC would prohibit their use by Novices. Most of them need the practice with a straight key anyway.

— Ricker J. Bodholdt, KN4TDN

THE HBR-14

Oklahoma City, Oklahoma
Post Office Box 8675

Editor, QST:

I thought you might like to know I have built and have had working for several months the HBR-14 receiver (QST, July, 1957). It was constructed using the parts as specified in Ted Crosby's article. I had no trouble getting it into operation. It tunes just as sharp as the article claims and it sounds and tunes similar to the Collins receiver on c.w. On ten meters I do not try to cover all the band with one set of coils (neither does the Collins). Have it adjusted to cover 28,000 to 28,550 kc. It has been a lot of fun building and getting it into operation.

Let us have more on receivers in QST.

— Horace Marrinan, W5AYO

113 North Broadway
Siloam Springs, Arkansas

Editor, QST:

I wanted to let you know how swell I think the HBR-14 receiver is that was written up by Ted Crosby, W6TC. I have been on s.s.b. and c.w. the past five years (c.w. and a.m. before that) and have been using a Collins 75A1 and Central Electronics Slicer. The signal-to-noise ratio is so much better that there isn't much comparison, the HBR being so much hotter in every way. I find I don't need a slicer and the 75 kc. i.f. makes the receiver on c.w. a dream almost come true. I might add I have never before built a receiver except a two- or three-tube job in about 1934. Thanks for publishing the article and I might add Ted was more than helpful with suggestions, getting me straightened out on some minor points.

— John Stockton, W5DRW

HOW TO QSL

225 N. Julian Street
Naperville, Illinois

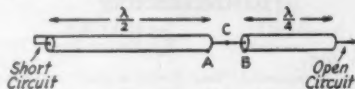
Editor, QST:

You cannot stress too strongly the matter of complete addresses on QSL cards. I have received cards addressed like the following: Dave's RF Plant, K9GSW, Naperville, Illinois, or Dave, K9GSW, A.R.S., Naperville, Illinois. As any two-year-old can see, this is entirely insufficient for the Post Office Department. As there is another amateur with the name Dave in this town, and the calls mean nothing to the Post Office, the cards often are sent to the wrong address. Please put in a plug for complete addresses!

— Dave Harr, K9GSW

Quist Quiz

This problem, sent by Louis Tonik, W3DVB, is one that either you solve immediately or you take a long, long time to figure out.



When two lengths of RG-S/U are connected as shown below, what is the impedance between

points A and B? For clarity, the connection of the inner conductors at C is shown expanded slightly.

The answer to last month's tube-short question is "You can't." Actually the heater, cathode and grid were shorted together within the tube, and the lead from the cathode to pin 5 had burned out in the process. Thus testing the tube with an ohmmeter gave the unusual answer of a heater-to-grid short that didn't involve the cathode.

Quist Quiz Correspondence

THREE RESISTORS IN A BOX

(The April Quist Quiz involved a box with three terminals; resistance measurements between any two terminals showed 20 ohms. Such a box could contain a delta of 30-ohm resistors or a Y of 10-ohm resistors, and the second half of the problem was to determine, without opening the box, which configuration was used. Best answer we had, as reported in the May issue, was to burn out one resistor. This prompted several letters pointing out how simple it was to do without burning out one resistor.)

Texas, U. S. A.

Quist Quiz Editor, QST:

Your Quist Quiz in the April issue of QST intrigued me and I was surprised that the answer was not given in the May issue. A very simple method exists to find out if the box contains the Delta or Y connection. Put any convenient voltage between two of the terminals on the box. Between the third terminal and one of the other two place a 5-ohm resistor. By measuring the voltage across the 5-ohm resistor the type of connection can be determined. The delta connection will have $\frac{1}{4}$ of the applied voltage across the 5-ohm resistor. The Y connection will have $\frac{1}{4}$ of the applied voltage across the 5-ohm resistor.

(name withheld)

New York, U. S. A.

Quist Quiz Editor, QST:

... that the type of circuit can be determined by connecting a known resistance (in this case 10 ohms) between any two binding posts and measuring the resistance between these posts. The resistance, as determined by the resistance formula, for a delta connection would be 6.66 ohms and with the Y connection would be 16.66 ohms.

(name withheld)

Inglewood, Calif.

Quist Quiz Editor:

Disappointed in your solution! Why not put the "black box" in an r.f. field and test for voltage between terminals? If it's Y, you get nil; if delta you should read voltage. Why not?

— Everett McMullin, W6DSY

Univ. of Colo.
Boulder, Colo.

Quist Quiz Editor, QST:

If one assumes pure resistance in the delta wye Quist Quiz, it may be proven mathematically that the two networks are identical as far as the external circuit is concerned, and no amount of measurement could tell one from the other. I suggest placing the box on a photographic plate and putting a bit of radioactive material on top. It seems a fellow named Röntgen did some work along these lines and came out pretty well.

— Jon W. Osterlund, W9WMK
(But suppose we used a thick lead box? — Ed.)

● Technical Correspondence

MORE QUAD DIMENSIONS

7 Warwick Road
Chatham, N. J.

Technical Editor, QST:

To corroborate W5GGV's findings on the dimensions of the Quad antenna ("Technical Correspondence," QST, April, 1957), similar observations were made on several Quads constructed at W2GJD.

The resonated length of one side of the driven element of a one-band cube Quad was found to be about 4 per cent longer than called for by the formula

$$L \text{ (feet)} = \frac{1}{4} \times \frac{984}{f}$$

where f = frequency in Mc.

In other words, the length-correction factor of 1.04 times the formula length gave the practical resonant length.

In the two-band cubical Quad (21 Mc./28 Mc.) the resonated length was found to be about 3 per cent longer than the formula length for each Quad.

In the three-band cubical Quad (14 Mc./21 Mc./28 Mc.), however, the length-correction factor for the 14-Mc. Quad was found to be about 1.06; for the 21-Mc. Quad it was found to be 1.02; and for the 28-Mc. Quad it was also about 1.02.

— Walter Hladky, W2GJD

Happenings of the Month

FCC-IRAC Frequency Proposals

U.H.F. Changes—1800-2000 kc. Changes

FCC-IRAC PROPOSALS

The long-awaited announcement of the views of agencies of the U. S. Government toward the frequency allocation table, in preparation for the forthcoming world radio conference, was made in mid-April jointly by the Federal Communications Commission and the Interdepartment Radio Advisory Committee of the Office of Defense Mobilization. For the amateur radio service, the proposed frequency table includes provision for continuance of every present amateur frequency assignment (with some changes in u.h.f. bands described under another heading in this column), including availability of the Loran band and the 27-Mc. ISM band!

FCC and IRAC indicate they have found the Atlantic City allocations table below 30 Mc. generally satisfactory, and propose only minor changes in that portion of the spectrum, with little or no effect on the distribution of space to the various radio services. Above 30 Mc., past experience in the use of radar and associated devices of radionavigation and radiopositioning requires, in the FCC-IRAC view, considerable expansion of frequency provisions for those techniques, and the table above 30 Mc. is modified accordingly. However, our 6- and 2-meter bands are proposed to be continued intact; above 220 Mc. certain provisions for radiopositioning use of amateur bands, detailed hereinafter, are also proposed.

The joint proposals now go before the allocations committees of the preparatory groups in Washington looking toward the establishment of a final U. S. position.

U.H.F. CHANGES

In mid-April the FCC issued a Memorandum Opinion and Order dealing with its frequency allocations to various services above 200 Mc. The action flows from a request by the Office of Defense Mobilization to expand the provisions for radiopositioning requirements, "which have increased significantly in recent years due to the international political climate and the advent of the 'space age.'" FCC has therefore modified some of the u.h.f. assignments; for example, it has taken some space from non-Government users, such as the fixed and land mobile services and made it available to Government for radiopositioning. The action was taken without notice or hearing, because of the stated urgency involved in national defense considerations.

The order also affects amateur bands, although only in comparatively minor respects. Our 3300-3500 Mc. is shifted, effective immediately, to

3500-3700 Mc. Other amateur assignments above 220 Mc. are continued, but with the Government radiopositioning service also admitted to such bands (except 21,000 Mc.) on a priority basis. See the editorial page this month for additional background.

The language of the amended amateur regulations is published below; these new rules are *now in effect*.

In a related action, Docket 12404, FCC proposes additional changes in u.h.f. assignments to allow for expansion of radiopositioning facilities. These affect mostly services other than amateur; there is only one matter involved of interest to us—a proposal to change the 21,000-22,000 Mc. amateur band to read 22,000-23,000 Mc. The views of the League on this proposal will be determined by the ARRL Board at its meeting in May.

1. §12.111 is amended as follows:

a. Paragraph (j) is amended to read as follows:

(j) 220 to 225 Mc., using types A0, A1, A2, A3, A4, F0, F1, F2, F3, and F4 emission. In this band the amateur service shall not cause harmful interference to the government radiopositioning service.

b. Paragraph (k) is amended to read as follows:

(k) 420 to 450 Mc., using types A0, A1, A2, A3, A4, A5, F0, F1, F2, F3, F4, and F5 emission. The maximum DC plate power input to the final stage of the transmitter shall not exceed 50 watts. In this band the amateur service shall not cause harmful interference to the government radiopositioning service.

c. Paragraph (l) is amended to read as follows:

(l) 1215 to 1300 Mc., using types A0, A1, A2, A3, A4, A5, F0, F1, F2, F3, F4, and F5 emission. In this band the amateur service shall not cause harmful interference to the government radiopositioning service.

d. Paragraph (m) is amended to read as follows:

(m) 2300 to 2450 Mc., 3500 to 3700 Mc., and 5650 to 5925 Mc., using types A0, A1, A2, A3, A4, A5, F0, F1, F2, F3, F4, F5, and pulse emission. Operations in the frequency bands 2300 to 2450 Mc. and 5650 to 5925 Mc. are subject to such interference between 2400 and 2450 Mc. and between 5775 and 5925 Mc., respectively, as may result from emissions of industrial, scientific and medical devices on the frequencies 2450 and 5850 Mc., respectively. In these bands the amateur service shall not cause harmful interference to the government radiopositioning service.

e. New paragraph (n) and (o) are added to read as follows:

(n) 10,000 to 10,500 Mc. using A0, A1, A2, A3, A4, A5, F0, F1, F2, F3, F4, and F5 emission. In this band the amateur service shall not cause harmful interference to the government radiopositioning service.

(o) 21,000 to 22,000 Mc., and any frequency or frequencies above 30,000 Mc., using A0, A1, A2, A3, A4, A5, F0, F1, F2, F3, F4, F5, and pulse emission.

2. §12.231 is amended as follows:

a. Paragraph (c) is amended to read as follows:

(c) Except as provided in paragraph (d) of this section, at such time as any or all of these frequency bands are withdrawn from availability to stations operating in the Amateur Radio Service, such bands shall be jointly available to stations in the Radio Amateur Civil Emergency service and to stations in the military services for training and tactical operations. At that time, in areas where interference might occur, local mutual arrangements shall be

made regarding times of operation such as to preclude or satisfactorily alleviate interference. In time of actual civil defense emergency, stations in the Radio Amateur Civil Emergency Service shall have absolute priority.

b. New paragraph (d) is added to read as follows:

(d) In the band 220 to 225 Mc., stations operating in the Radio Amateur Civil Emergency Service shall not at any time cause harmful interference to the government radio-positioning service.

(Refer to White Sands restrictions, ED.)

1800-2000 KC. CHANGES

Continued expansion of the Loran navigation service, which has absolute priority in 1800-2000 kc., has required the withdrawal of a portion of the privileges available to amateurs in that portion of the spectrum under a sharing arrangement. Effective May 10, 1958, the band segments 1875-1925 kc. are withdrawn from amateur use. This action stems from national defense considerations involved in the establishment of additional Loran stations operating on 1900 kc. at locations along the seacoasts of the U. S. and its possessions, and the interference protection made necessary thereby. Henceforth, amateurs may continue to use only the 1800-1825 and 1975-2000 kc. segments under the geographical and power restrictions already in force.

NATIONAL CONVENTION

The Tenth ARRL National Convention in Washington, D. C., August 15-17, continues to shape up as a major vacation attraction this summer. By the time this is in print, the Federation of Radio Amateur Clubs, Inc., will have

all details in a brochure. In the meantime, queries for information (and checks for registration and events as listed in April QST) can be sent to the Federation at P.O. Box 3726, Washington 7, D. C. All hotel reservations can be handled by addressing the ARRL Convention Housing Bureau, 1616 K St., N.W., Washington, D. C.

Although no names have yet been announced, the most prominent amateurs in Government, including the Armed Forces, are slated to participate in various sessions and at the major functions. A convention communications system has been devised which will make instantly available from a central desk anyone attending the sessions, social affairs, sightseeing or other tours. Under guidance of the SCM, Louis T. Croneberger W3UCR, the system also includes an elaborate "talk-in" network of mobile frequencies to aid the mobile on his way to the big show.

Daily convention news will be printed in daily issues of the "Auto-Call," the widely-circulated journal of Washington-area hams, throughout the convention period. "Andy" Anderson, W3NL, editor and publisher, has installed brand-new equipment for speedy handling of news and photos to meet the schedule.

On the exhibits side, the plans of leading ham-gear manufacturers, distributors and the various Government agencies are taking form as this report goes to press. Exhibits Chairman John M. Boland, W4CC, says all armed forces will be represented by displays.

Strays

W2OLU tells us that when his *Hints & Kinks*, *License Manual*, *Antenna Book*, etc., get too dog-eared, he used Scotch electrical tape #33 to reinforce the binding and the tattered edges. (Don't forget, though, that we publish a new edition of the *License Manual* every six months!)

The Hilltop Transmitting Association (W3ZGD), of Red Lion, Pa., awards a box of Red Lion cigars to anyone who works five Red Lion hams. The secretary of the club is Mr. Marion E. Bollinger, RFD #1, Box 21, Freeland, Md.



During the recent DX contest W9NH worked CN8QU, KH6IJ and VP7NG on all bands 160 through 10 meters.

Not so very long ago W1FTX moved out to a nice hill-top location in the wilds of Connecticut, where he figured the noise level was low and the DX good. But now he wonders. The other morning he was awakened by a loud and persistent clanging in the yard. After a bit he discovered a woodpecker sitting up on top of his 6-meter beam and pecking away at the aluminum boom. By this time that bird must have an aluminum beak.

We thought you might like to take a look at Gil, W1CJD, QST's cartoonist for many, many years. His first contribution appeared in the June, 1927, issue, and his style has been a QST trademark ever since. His keen appreciation of the flavor of ham radio comes in part from the fact that he is an active ham, mostly on the 80-meter traffic nets, where he can be heard nearly every night. By days, he is city editor of the *Middletown Press*.

QST for

Board Meeting Highlights

The Board of Directors of The American Radio Relay League, Inc., held its 1958 meeting at Hartford, Connecticut, on May 9. During the meeting the Board examined at length the status of the amateur radio service in preparatory committee work for the forthcoming International Telecommunications Conference.

To promote v.h.f. DX and further amateur contributions to knowledge of long-distance propagation in that portion of the spectrum, the Board voted to request amendment of the amateur rules to provide exclusive c.w. band segments of 100 kc. each at the low ends of the 50- and 144-Mc. bands, with a special plea for prompt action by the Commission so that, if adopted, the new provisions could be useful in amateur participation in the program of the International Geophysical Year. Reviewing its 1956 request of FCC for a 50-kc. expansion of the 14-Mc. voice band (not yet acted upon by FCC), the Board decided to amend its petition by deleting the proposal to limit use of the band segment to Advanced or Extra Class licenses.

In view of the imminence of an international conference, the Board voted to oppose the Commission's proposal in Docket 10237 but countered with a request for amendment of the amateur rules to provide coastwise operation on all amateur bands with all modes of emission. It instructed the filing of League comment in support of the FCC proposal to shift the amateur 21,000-Mc. band to 22,000-23,000 Mc.

An application by the Galveston County Amateur Radio Club to conduct an ARRL National Convention in Galveston, Texas, during 1959 was approved, but the Board also indicated its feeling that national conventions henceforth should not be held oftener than once in three years. The Housing Committee was continued another year, to study the problem of Hq. facilities. The Board re-elected present officers and members of the Executive Committee, and rescinded its 1957 actions which limited the functions of that Committee.

The Board continued its authorizations for reimbursement of travel by SCMs, SECs and QSL Managers in furtherance of League field organization aims, commended the Hq. training aids program and urged expansion of the scope of its visual aids materials, and expressed approval of the general conduct of League contests and formulation of rules by the contest committee.

The General Manager was directed to investigate the feasibility of several proposals — discontinuing conelrad monitoring now required of amateurs, more low-power sharing of the loran bands, amateur operating privileges in 1750-1800 kc., and eliminating the requirement of A-1 or A-3 identification when using other modes of emission.

Readers will be interested in some of the things the Board did *not* do. It rejected proposals to permit Technician voice operation in 146-148 Mc.; to expand 80-, 40-, and 15-meter voice assignments; to restrict Novices to A-1 emission only; and to open a part-time information office in Washington, D. C.

The Board adopted a resolution of greeting to the IARU Congress to be held at Bad Godesburg, Germany, in July, and also instructed the Secretary, while in attendance at the 26th LMRE Annual Convention in Mexico City, to convey to the *Liga* its best wishes for a successful meeting. Resolutions of appreciation were adopted expressing thanks to the Field Engineering & Monitoring Bureau of FCC for its cooperation in amateur affairs, to vice-directors and field organization officials of the League for their fine performance during the past year, and for the outstanding communications service provided both by amateur stations in the Antarctic and the U.S. stations working with them.

1958 ARRL Field Day Rules

Annual Test for Emergency-Powered Stations, June 28-29

FIELD DAY is upon us again! Just about every amateur in the 73 ARRL Sections is already aware that June is Field Day month and that more operating fun is to be had on that one June 28-29 week end than at any other time during the year.

Working under conditions which could be encountered in an actual emergency, clubs and other organized groups will set up and operate multitransmitter stations independently of normal power facilities. Amateurs not with such teams will go into action as mobiles or unit-individual portables. Emergency-powered fixed stations, such as civil defense and amateur club stations, will compete in the Class D category. But whatever your method of participation, hundreds of amateurs will be scanning the bands for your signal.

The rules and entry classifications are unchanged. Pick any consecutive 24-hour period from the Field Day timetable. Once on the air call "CQ FD" on c.w. or "CQ Field Day" on phone, then give the station worked a signal report and your ARRL Section or specific location and stand by to receive like information.

Here are three examples to assist score calculations:

Example 1

Assume a 25-watt rig wholly on batteries, not originating or relaying any messages, and not having more than two operators.

40 points (40 stations worked)
 $\times 3$ (power below 30 watts)
 120
 $\times 3$ (all radio equipment independent of commercial mains)
 360
 $\times 1.5$ (If Class B or C and everything on batteries)
 540 claimed score

Example 2

Same as Example 1 but one Field Day Message to the SEC or SCM is originated and passed in good form.

65 points (40 QSOs + 25 points for FD message)
 $\times 9$ (3×3 — power multiplier multiplied by independence-of-mains multiplier)
 585
 $\times 1.5$ (everything on batteries)
 877.5 claimed score
(Copies of all messages originated and relayed must accompany Field Day reports.)

Example 3

The Podunk Hollow Radio Club (or any group of three or more licensed operators), portable at its FD site, operates two transmitters simultaneously. Each rig runs 75 watts input and batteries or generators furnish power. One message is started in good form (25 points), 1 is received and relayed onward (2 points), and 230 stations are contacted.

257 points (230 QSOs + 25 + 2)
 $\times 2$ (power input over 30 and under 150 watts)
 514
 $\times 3$ (all gear independent of mains)
 1542 claimed score
(No battery multiplier for either clubs or groups.)

Clubs should get every member-owned mobile

FIELD DAY TIMETABLE

Time	Start	End
	June 28	June 29
AST	5:00 P.M.	8:00 P.M.
EST	4:00 P.M.	7:00 P.M.
CST	3:00 P.M.	6:00 P.M.
MST	2:00 P.M.	5:00 P.M.
PST	1:00 P.M.	4:00 P.M.

(Operate no more than 24 consecutive hours out of the total 27-hour period)

unit active and report their aggregate scores to ARRL. Our increased showing through individual mobile reports and club aggregate mobile scores is important because such units are considered indispensable in civil defense planning.

Convenient log forms and summary sheets are now available from the ARRL Communications Department. You may make up your own, but please remember to include starting and ending time of operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and locations of stations worked as well as power sources and inputs, location and call of station, number of transmitters in simultaneous operation, number of persons participating, club name (if any) and score computations. To assure listing in the final results in *QST*, mail your logs by July 26.

Read over the rules below, review the results of last year's FD in October 1957 *QST*, and try your luck at the *So You Know Your Field Day Rules* quiz in this issue. Then you should be all set to "go portable" and help make the 1958 Field Day the greatest amateur emergency exercise ever held!

Rules

1. Eligibility: The Field Day is open to all radio amateurs in the sections listed on page 6 of this issue of *QST*.

2. Object: For portable and mobile stations to work as many stations as possible; for home stations to work as many portable and mobile stations as possible.

3. Conditions of Entry: Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Contest Committee.

4. Entry Classification: All entries will be classified according to number of transmitters in simultaneous operation. They will be further classified as follows: "A," club or nonclub group portable stations; "B," unit or individual portable stations; "C," mobile stations; "D," home stations operating from emergency power; "E," home stations operating from commercial power sources. Thus a club or group running three transmitters simultaneously will be in the 3A classification, or a mobile station with one transmitter will be in the 1C classification.

Portable stations are those installed temporarily, for FD purposes, at sites away from customary fixed-station locations. Portable equipment or units must be placed under one call and the control of one license, for one entry. All control locations for equipment operating under one call must lie within a 1000-foot diameter circle.

Group participation is that portable-station work accomplished by three or more licensed operators.

Unit or individual participation is that portable-station work accomplished by either one or two licensed operators.

Mobile stations are complete installations including power source and antenna, mounted in or on vehicles and capable of being used while in normal motion. If they utilize antenna supports not normal or suitable for use during motion, installations must be classified as portable instead of mobile. Each mobile entry call must be different from any other FD station participating.

Home-Station participation is that work by fixed amateur stations not operating portable or mobile.

A transmitter used to contact one or more stations may not subsequently be used under more than one other station call during the Field Day period.

5. **Field Day Period:** All contacts must be made during the period indicated elsewhere in this announcement. An entry may be operated no more than 24 consecutive hours of the 27 hours available.

6. **Bands:** Each phone and c.w. band is regarded as a separate band. The following (and additional u.h.f.-s.h.f. bands) constitute separate bands: A1: 1.800-1.825 "east" or 1.975-2.000 "west," 3.5-4.0, 7.0-7.3, 14.0-14.35, 21.0-21.45, 26.96-27.23, 28.0-29.7, 50-54 and 144-148 Mc. A2: radio-teletype and frequency-shift keying are grouped with A1, in the bands where they are allowed. A3: 1.830-1.825 "east" or 1.975-2.000 "west," 3.8-4.0, 7.2-7.3, 14.2-14.3, 21.25-21.45, 26.96-27.23, 28.5-29.7, 50-54, and 144-148 Mc. All forms of voice transmission will be grouped with A3, in the bands where they are allowed. (In Canada and Cuba, their respective phone bands apply.)

The use of more than one transmitter at one time in the same band is not allowed.

7. **Exchanges:** Signal reports and ARRL section (or specific location) must be exchanged in proof of contact.

8. **Valid Contacts:** In Class A, B and C, a valid contact is a completed exchange with any amateur station. In Classes D and E, a valid contact is a completed exchange with any station in Class A, B or C. Cross-band contacts are not allowed. Contacts by mobile stations may be made in motion or from any location(s). A station may be worked more than once only if the additional contacts are made on different bands.

9. **Field Day Message:** A Field Day Message is one originated by a Class A, B, or C station and addressed to the SEC or SCM (see address in QST, p. 6) stating the number of operators, the field location, and the number of AREC members at the Field Day station. Only one Field Day Message may be originated.

10. **Scoring:**

Points: Each valid contact counts 1 point.

Message Credit: Credit for handling messages may be obtained only as follows: 25 points for originating one Field Day Message to SEC or SCM. In addition, each Field Day Message received for relay will score 1 point when received by radio and 1 point when sent onward by radio. No FD Message may pass through the same station twice. There will be a deduction of 10 points for omission of handling data or for defects in form. Copies of all messages originated and relayed must accompany Field Day reports.

Multipliers:

Power: Output-stage plate input 30 watts or less: 3. Output-stage plate input between 30 and 150 watts: 2. Output-stage plate input between 150 and 1000 watts: 1. The plate input of a grounded-grid amplifier is its plate input plus the plate input to the driver stage.

Independence-of-Mains: All radio equipment independent of commercial power source: 3. All radio equipment not independent of commercial power: 1.

Battery Power: (applies to Class B and C only): 1.5. The battery capacity or size shall in all cases be adequate to permit one hour's continuous operation of the station. Charging batteries from commercial mains while batteries are connected to transmitter or receiver voids the "independence-of-mains" and "battery power" multipliers.

Multipliers do not apply to Class D and E entries.

Final Score: The final score equals the total "points" multiplied by the "power multiplier" multiplied by the "independence-of-mains" multiplier (multiplied by the "battery power" multiplier, if applicable). Where different multipliers apply during the Field Day period, points are multiplied by the multiplier in effect at the time the points were earned.

11. **Club Aggregate-Mobile Scores:** Entries under Class C may be combined to form a "Club Aggregate-Mobile Score." The club name must be noted on the individual reports, and the club secretary must submit a claimed aggregate score. Credits to the extent supported by the reports submitted to ARRL will be allowed. Only bona fide members of the club, residing in the club territory, may contribute to the aggregate-mobile club listing.

12. **Reporting:** Mail reports or entries on or before July 26. Reports must show starting and ending time of FD operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and ARRL sections or locations of stations worked. Reports must also show power inputs and sources of power, number of transmitters in simultaneous operation, location of station, number of persons participating, class of entry, and score computations.

W3WV Receives Navy Award

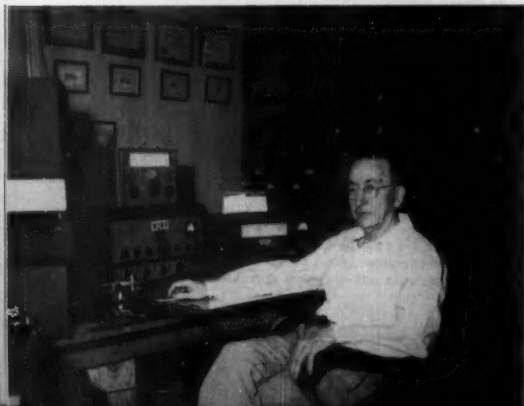
ANOTHER amateur honored by the Navy for outstanding public service is Leo Young, W3WV, who was awarded the Navy's highest civilian award—the Distinguished Civilian Service Award.

Mr. Young, who has over 40 years of Navy service, received the award for his outstanding contributions and pioneering scientific achieve-

ments in the fields of radio communication, radar electronics identification, and radio control. He joined Naval research activities in 1917, and has played a key role in many important projects ever since. It was he who proposed the present pulse radar system and contributed several ideas basic to its success. He was awarded a commendation from the Secretary of the Navy for his pioneering achievements in radio broadcasting in 1922; the Institute of Radio Engineers' Fellow Award in 1943; and the Presidential Certificate of Merit for his achievements in radar in 1946. He is now a consultant in the Radio Division of the Naval Research Laboratory.

Radio has been his avocation as well as vocation. An active amateur since 1905, he has been prominent in ARRL activities through the years. He has two sons who are also hams—W5RVI and KB6BJ.

Leo Young, W3WV, recent recipient of the Navy's Distinguished Civilian Service Award.



QST for

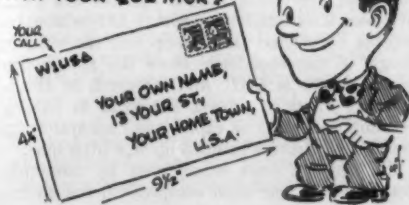
Jun

ARRL QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All you have to do is send your QSL manager (see list below) a stamped self-addressed envelope about $4\frac{1}{4}$ by $9\frac{1}{2}$ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

- W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
 W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
 W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
 W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
 W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
 W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
 W7, K7 — Joseph P. Vogt, W7ASG, P.O. Box 88, John Day, Oregon.
 W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
 W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
 W0, K0 — Alva A. Smith, W0DMA, 238 East Main St., Caledonia, Minn.
 VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
 VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Pointe Claire, Montreal 33, Que.
 VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
 VE4 — Len Cuff, VE4LC, 286 Rutland St., James, Man.
 VE5 — Fred Ward VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
 VE6 — W. R. Savage, VE6EO, 833 10th St. N., North Lethbridge, Alta.
 VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
 VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
 VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. Johns, Newf.
 VO2 — Douglas B. Ritey, Dept. of Transport, Goose Bay, Labrador.
 KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
 KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
 KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.
 KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

IS YOURS ON FILE WITH YOUR QSL MGR?



V.H.F. QSO Party

June 14-15

Another ARRL V.H.F. Party, open to amateurs who can work any band or bands above 50 Mc., starts at 2:00 P.M. local standard time Saturday, June 14, and continues until 11:00 P.M. local standard time Sunday, June 15. The 33-hour period will provide a fine opportunity to work some DX states, meet new friends, and give the v.h.f. gear a pre-Field Day workout.

Just call "CQ V.H.F. QSO Party" or "CQ Contest" to get in touch with other participants, then exchange names of ARRL Sections (see page 6). Figure your score as shown in rules 4 and 5.

A certificate will be awarded to the top scorer in each ARRL Section, and special recognition will also go to Novices, Technicians, and multi-operator setups (see rule 7).

After the contest, send us a copy of your log (as shown in the sample on page 48, June 1957 QST). Log forms are now available free on request from the ARRL Communications Department.

Rules

1) The contest starts at 2:00 P.M. Local Standard Time, Saturday, June 14, and ends at 11:00 P.M. Local Standard Time, Sunday, June 15. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

2) Name-of-section exchanges must be acknowledged by both operators before either may claim contact point(s). A one-way exchange, confirmed, does not count; there is no fractional breakdown of the 1-, 2- or 3-point units.

3) Fixed-, portable- or mobile-station operation under one call, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

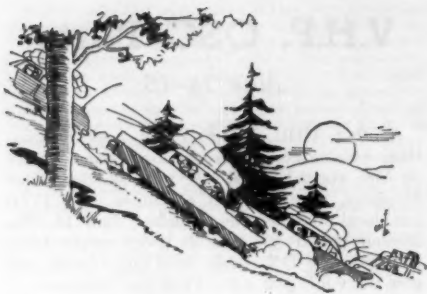
4) Scoring: 1 point for completed two-way section exchanges on 50 or 144 Mc.; 2 points for such exchanges on 220 or 420 Mc.; 3 points for such exchanges on the higher v.h.f. bands. The sum of these points will be multiplied by the number of different ARRL sections worked per band; i.e., those with which at least one point has been earned. Re-working sections on additional bands for extra section credits is permitted. Cross-band work does not count. Contacts with aircraft mobile stations cannot be counted for section multipliers.

5) A contact per band may be counted for each station worked. Example: W2TBD (S.N.J.) works W1PHR (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires completed exchanges with at least one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multiple-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licenses submit logs. Award Committee decisions will be final.

8) Reports must be postmarked no later than July 2, 1958, to be eligible for awards. See the sample log on page 48, last June QST for correct form, or a message to Headquarters will bring printed blanks for your convenience.



So You Know Your Field Day Rules

BY PHIL SIMMONS,* WIZDP

ONCE upon a time there was a ham named Sam who got his ticket when he was nine. Sam loved DX and contests and had 200 confirmed and three Sweepstakes awards socked away by the time he graduated from high school, first in his class. Sam was a bright boy. Because math was his forte he started studying E.E. at M.I.T., where he continued to draw straight-A grades. As a sophomore, on crisp winter evenings when the homework was done and no contests were on, Sam always curled up with a good book. *Entropy of Stochastic Processes* was one of his favorites. So were *The Stability Problem in Matrix Eigenvalue Problems* and *Solution of Maxwell's Equations in Cylindrical Coordinates*. Yes indeed, Sam was a very bright boy.

Came early 1957 and Sam was appointed Field Day Chairman of his club, one of those big-time

* Asst. Communications Manager, C.W., ARRL.

Here's a quiz well calculated to try the patience of any amateur who thrives on operating, be he SSer, DXer, trafficker, v.h.f. man, ten-meter phone enthusiast, contest loophole lawyer or simply plain old-fashioned ragchewer. Clubs are invited to kick the questions around at June meetings for some harmless, brain-teasing entertainment. And with FD imminent; what more appropriate time to test one's knowledge of the rules?

outfits that take the whole business most seriously. At least 50 members participated, goofing off was not tolerated, and 1000 to 2000 contacts always were made.

Genius that he was, young Sam launched his crash program. He hurriedly lined up the loftiest mountain peak in the vicinity for the site, set up operator-logger shifts, assigned people to installation and maintenance and to cooking and k.p., delegated responsibility for equipment and antennas, cranked out lists of items needed from tents and cots down to the last pencil. Old pros marveled at Sam's organizational prowess, unanimously agreed that never in club history had the advance planning been so shrewdly laid on.

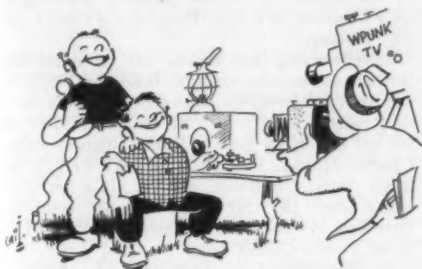
Then fate lowered the boom. Shortly after Field Day a crumpled, tear-spattered letter fluttered out of an ARRL mail sack. It was from Sam. Everything had gone awry. Rain and wind brought tents and antennas down, as capacitors and resistors fizzled with frightful regularity. Three of eight transmitters switched to commercial mains after a generator conked out. Several rigs dropped from 150 to 25 watts input due to tube failures. The copy of the Field Day Message and two log sheets were lost. Despite all the grief, however, the club managed to make over 1000 valid QSOs. The reason for the weeping was that Sam — the DX and contest ace, the A student, the organizational and mathematical whiz — *didn't know how to figure the club's Field Day score!*



Sam wasn't the only one. After last year's Field Day there were some three hundred Sams who didn't know how to calculate their claimed scores or figured them incorrectly — certainly not for lack of mathematical ability because only simple addition and multiplication are involved. Others forgot to indicate transmitter inputs or whether emergency power was employed or whether they were portable or at home. Dozens furnished everything needed but the *call used*. When such essentials are omitted, letters must be written to unsnarl the foul-up and the ensuing tangle of correspondence slows the appearance of the results in *QST*. And inasmuch as Headquarters wants to process FD so as to publish the final standings as rapidly and accurately as possible, we have whopped up this little quiz.

To figure a score when beset by Sam-type complications, one must comprehend the under-

lying purposes of ARRL's June funfest, so let's review the whys and wherefores. First, it is basically an emergency preparedness drill, not a contest. It's our yearly attempt to put amateur radio's best foot forward by showing what we can do in time of flood or blizzard or any other act of God. Quivering with expectancy and with nostrils flaring, we charge out to a hilltop to demonstrate how well we can function away from home. Visitors are welcome. We are polite to representatives of the press who have written many complimentary words about our hobby. We pose blushing (but becomingly, we hope) for newspaper photos and live telecasts. We do our best.



Now the picture should be obvious. Its very name explains why no one parked on his tailbone in the home shack earns multipliers to compete with field stations scorewise, and why Field Day is no Sweepstakes or DX Contest. All forms of portable work are encouraged through entry classes A, B, and C and the club mobile aggregate listing. To answer the following questions correctly, one must learn the definitions of "portable," "mobile," and "Field Day Message," three more major stumbling blocks. What is a "home station?" How much traffic credit is allowed and under what circumstances may it be counted toward score? What multipliers are granted for power, independence-of-mains, and batteries?

Switch to the 1958 announcement in this issue. Examine the detailed rules and the three scoring examples. Note that we must be portable on emergency power to merit the IOM multiplier. How about input? When disaster strikes might not a half-kw. provide more reliable communications than a 10-watt peanut whistle? Perhaps, but lightweight portability and power drain can be important as well. Besides, in the matter of inputs the scoring system bows to the long-recognized value of competitive incentive, hence strives to equate high and low power efforts. Without local and national competition between stations of comparable size, without new contact and score records as targets, without that bet with the club across town (loser picks up the dinner tab) and the like, Field Day — noble purpose notwithstanding — might be less popular. And what nincompoop would tamper much with a formula that has proved itself such a bang-up success for lo these many years?

Let's cut the shilly-shally and get down to cases. Assume that all contacts are valid (i.e. made, logged and duly reported) and that all FD Messages are handled in proper form and copies forwarded to ARRL, *unless otherwise indicated*.

Pencils poised? Rules down pat? Wits QRV? Okay, here's the quiz:

Answer true or false. Count four points for each correct answer. One hundred per cent is a perfect score.

1. KN4OKZ is one of 15 members present at Potomac Valley Radio Club's installation. Any rig he operates must run 75 watts input or less, be crystal-controlled, and stay within the authorized KN/WN band segments.

2. One-man portable W6BES/6 identifies his location as Encino, California in all contacts. As the rules require exchange of names of ARRL Sections, his final score is zero.

3. To determine input to a grounded-grid final amplifier for FD purposes, the filament power must be added to the plate power because the filament is "up in the air" for r.f.

4. No FCC regulation or FD rule would be violated should a Technician serve as logger on the 7-Mc. c.w. position at a FD setup.

5. The boys have been talking it up for weeks and Orville can scarcely wait for the big day. Then along comes Saturday and he has tired blood or Asiatic Flu or something and his temperature is 100°. The XYL issues an edict, "With that fever you're staying home, Field Day or no Field Day — and that's final!" Bitterly disappointed, Orville acquiesces, but that evening his fever subsides and he is allowed to move into the driveway with his suitcase portable. This rat's-nest sports a v.f.o.-driven 6V6 final at a smashing 7 watts plus a 58-58-56 autodyne, both of which Orville ties to his huge 5-element wide-spaced 20-meter rotary. Power comes from a small Onan. The QRM is awful on that antiquated inhaler but Orville manages to knock off 100 contacts. Fifty are FD portables, 20 are Stateside nonportables, 30 are home-station Europeans. Orville's score can be no higher than 50 points all told.

6. Right after FD W8XYZ informs the League that the Sadsack Amateur Radio Club made a 4500-point tally. There was no carbon paper at the site, no copy of the log is presently handy,





and he is much too busy to prepare one. He asks that the club's results be listed in the *QST* tabulations anyway. SARC's score will appear in the tabulations.

7. The rules do not permit club portables to utilize batteries as a power source.

8. Home stations receive neither power nor independence-of-mains multipliers.

9. Originated by home station W9RQM, this message is sent by radio to W9GIL during the FD period:

NR5 W9RQM CK7 WAUSAU WIS 2000
JUNE 28 GEORGE WOIDA W9KQB SCM
AA 2103 SOUTH 9 ST AA MANITOWOC
WIS BT ONE AREC MEMBER ENJOYING
HIMSELF IMMENSELY 73 BT RENO
W9RQM AR

It can be the equivalent of 25 contacts toward W9RQM's score.

10. Club portables sometimes can qualify for a total multiplier of 13.5.

11. Portables manned by two brasspounders sometimes can qualify for a total multiplier of 13.5.

12. A PE-99 powers all rigs while receivers, keying monitors, lights, hot plate, v.t.v.m. and soldering iron are on commercial mains. Though emergency-powered at a portable site, this group is ineligible for the independence-of-mains multiplier of 3.

13. W1DX/1 can roll up 127 QSOs and end up with a score of only 127 points.

14. An amateur operating his mobile rig from a.c. mains can qualify as a Class C entry.

15. WSQAV/Mobile appears in the final standings with 69 contacts and a score of 1971. A misprint must have been involved because WSQAV/8 could not earn such a large score with just 69 QSOs.

16. There is no limit to the number of hams that can work the transmitter of a mobile entry.

17. A club with five transmitters, four receivers, eight antennas and 37 operators can participate as a Class 6A entry.

18. *QST* credits W1EH/1 with 433 contacts and 3897 points in the one-transmitter class. It follows that W1EH/1 could not have handled any traffic whatsoever during the FD period.

19. No FD rule is violated when a club portable uses an antenna 2500 feet away from its "control location."

20. VE1OM/1 operates continuously from 6:00 P.M. AST June 28 until 8 P.M. AST June 29, 1958. Assuming that exactly ten QSOs per hour were made throughout the entire period, VE1OM/1 can be credited with 260 valid contacts.

21. This garbled message pops up at 38 La Salle Road:

NR1 K4IA/4 FALLS CHURCH GA CK20
1630 PM JUNE 39 ARRL WEST HART-
FORD 7 COLO BT W4TFX AND I HAV-
ING TREMENDOUS TIME IN CLASS B
NEAR WASHINGTON DC STOP BEST
73S TO THE HEADQUARTERS GANGS
BT EV BATTERY W4IA/4 AR¹

It was mailed by the last amateur receiving it after a number of relays. The above is not a Field Day Message.

22. Observing that no one has yet made 300 QSOs in the mobile category, W9BRD, W9MFY and W9VES decide to join forces and shoot for a new record. They load VES' battered Merc to the hilt and motor close to Illinois' highest point, Charles Mound. Using the call W9MFY/9, 30 watts input, batteries, and a full-wave 160-meter zepp, the trio grinds out 327 contacts. Excellent results notwithstanding, W9MFY/9 is not a valid Class C entry.

23. Timbuktu Civil Defense Radio Association has a regular club station situated in the basement of the Kappa Delta Rho frat house on campus, but "to get out better" gear is toted up to the bunkhouse on the third floor. The TCDRA team pushes no traffic but belts out 250 contacts with 15 watts input and a PE-75 supplying the juice. Their score can be no more than 250 points.

24. Battery-powered W3EIS and W4KFC start off as a bona fide Class B station using the call W3EIS/3. Input to two ARC-5 senders is held to 450 volts at 60 ma. Hot as firecrackers, Don and Vic are averaging 30 QSOs per hour until noon Sunday when visitor W3XYZ drops by for a single-handed operating fling. Alas, his fist is lousy and his logging worse and the W3EIS/3 contact rate plummets. After 70 minutes of this farce W3XYZ departs, whereupon Don and Vic—sighing with relief—happily resume. With 650 contacts and no traffic work, W3EIS & Co.'s score is 8775 points.

25. Laurel Amateur Radio Association members W1CUT, W1FXK, and W1ICP take part as individual units in Class C. CUT makes 20 contacts, FXK makes 25, and ICP makes 30, with respective inputs of 10, 40, and 175 watts. All three sign "portable one in Connecticut" and are entitled to the battery multiplier. In addition, CUT originates and passes an FD Message to ICP who subsequently relays it to FXK. No other messages were handled. LARA's mobile aggregate total is 985.5 points.

(Answers on page 158)

¹ Profound apologies to ace traffic man Ev Battery, W4IA, for this example. Any resemblance to a message Ev may have originated is purely coincidental.



Hints and Kinks

For the Experimenter



IMPROVED CONTROL CIRCUITS FOR THE DX-35

THE accompanying diagram, Fig. 1, shows how a d.p.s.t. toggle switch can be used to advantage in the send-receive circuit of a Heathkit type DX-35 transmitter. Once the simple modification involving mounting and wiring the switch is completed, it will provide one-switch control of the transmitter plate voltage and any external relays that may be used for antenna changeover, receiver muting, etc.

S_{1A} of the new arrangement provides on-off switching of 115 volts a.c. that has been piped over to previously unused terminals 5 and 6 of the auxiliary power socket. This voltage may be cabled out to the aforementioned relays. S_{1B} of the modified circuit is connected in series with the on-off contacts of the "Operation" switch for the transmitter. Thus, S_1 provides simultaneous control of the transmitter, the antenna relay, and the receiver muting circuit.

In making the modification, first remove the key jack from the front panel of the transmitter. Drill a hole in the rear apron of the chassis, in between the coaxial receptacle and the microphone jack, and remount the key jack. The hole left vacant at the front of the rig should now be enlarged slightly to accommodate the toggle switch, S_1 .

Next, replace the lead between Terminal 6 of the operation switch and ground with a pair of leads which terminate at S_{1B} as shown in Fig. 1. The second wire originally connected to Terminal 6 of the operation switch (the one that goes to the slide switch) should be disconnected at Terminal 6 and then returned directly to ground.

Pin 11 or 12 of the operation switch is connected to the a.c. line cord at the 4-terminal tie-point strip identified as part "AA" on Heathkit pictorial drawings. Using an ohmmeter, or other means, determine which switch pin is so connected, and then run a wire from this pin to one terminal of S_{1A} . Connect the other side of S_{1A} to

Pin 5 of the auxiliary power socket, and then connect Pin 6 of the socket to Terminal 1 of lug strip "AA." This completes the wiring except for adding by-pass capacitors, C_1 and C_2 in Fig. 1, to Pins 5 and 6 of the power socket. These capacitors should be similar to those already connected to other terminals of the auxiliary power socket.

The filaments of the transmitter are still turned on and off with the operation switch after S_1 has been installed. The operation switch is set at either the c.w. or the phone position depending on the mode of transmission and is not used again until the transmitter is turned off. Turning the toggle on will apply high voltage — with operation switch on either phone or c.w. — and will activate the external antenna or other relays.

— Reagin Warren, W4RVH

When using a v.f.o. — DX-35 setup it is necessary to have the carrier on the air when zeroing in on the desired frequency. This forces the operator to sweep the band with a carrier and causes receiver blocking. The number two fault is minor in comparison. It is just that in changing back and forth from send to receive, the usual combination of switches on the transmitter and receiver have to be operated quickly and in the proper direction and sequence. Both of these faults are easily corrected by a simple modification without impairing the operation or basic design of the set. In fact, with the modification in effect, a shorting loop shoved into Pins 5 and 6 of the auxiliary socket leaves the operating circuits set up as described in the instruction manual.

What do we need for the big job? One 20,000-ohm 10-watt resistor, three .001- μ f. disk ceramic by-pass capacitors, fifteen inches or so of hookup wire and about 30 minutes. To accomplish the modification, refer to the pictorials in the instruction manual and perform the following steps:

1) Remove the two white wires on Terminal 6 of the operation switch, solder together and tuck out of the way. No insulation is necessary because

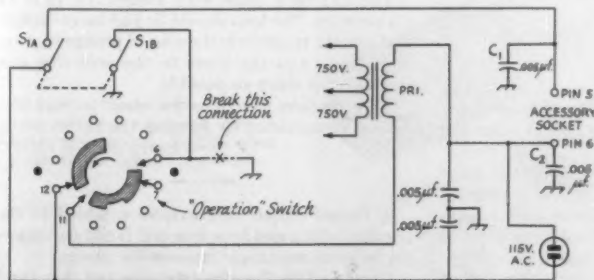


Fig. 1—Circuit of W4RVH's improved control circuit for the DX-35 transmitter. C_1 and C_2 (see text) must be rated for 115 volts a.c. S_1 is a d.p.s.t. toggle switch.

they are grounded about three inches away.

2) Remove the connecting wire between Terminals HH-1 and E-1.

3) Connect a piece of wire from Terminal 6 of the operation switch (S) to Terminal HH-1 (S).

4) Move the transformer high-voltage center-tap lead from FF-5 to FF-3 (S).

5) Move the lead of the 20K 10-watt resistor from FF-4 to FF-5 (NS).

6) Connect one lead of the additional 20K 10-watt resistor to FF-4 (NS) and the other lead to F-3 (NS).

7) Connect a wire from FF-4 (S) to F-6 (NS).

8) Connect a wire from FF-5 (S) to F-5 (NS).

9) Connect one lead of a 0.001 disk ceramic capacitor to F-3 (S) and the other lead to the nearest ground point (S).

10) Connect one lead of a 0.001 disk ceramic capacitor to F-5 (S) and the other lead to the nearest ground point (S).

11) Connect one lead of a 0.001 disk ceramic capacitor to F-6 (S) and the other lead to the nearest ground point (S).

With the above connections made, Terminals 5 and 6 on the auxiliary socket connect to the remote operating switch if one is used for push-to-talk operation. If such a switch is not used, 5 and 6 must be jumpered with a short piece of wire. The addition of a s.p.d.t. switch to any v.f.o. used with the set now will allow the v.f.o. to be turned on without turning on the transmitter since B+ to operate it appears on Terminal 3 of the auxiliary socket regardless of the position of the operation switch.

— Glen R. Jackman, W3GZP

SOLDERING AND SOLDERING ACCESSORIES

ONE of the petty annoyances in coil winding with cotton and silk covered wire is frayed insulation. A wire having frayed insulation is difficult to poke through a hole in a coil form, and loose and rumpled insulation certainly does not enhance the appearance of the finished product.

By melting solder directly over the point where the wire is to be cut, sufficient resin will be saturated into the insulation to hold it in place while the cutting, dressing, tinning and soldering operations are performed.

This trick is also very effective when it is necessary to tap a length of insulated wire. The results will not present the appearance of mice having gnawed at the covering!

— Bill Fishback, W1IKU

The problem: Field repair of a broken receiving antenna without having access to 115 volts a.c. for a soldering iron.

Solution: After cleaning the ends of the wires and looping them together, the joint was wrapped with solder that had been flattened with a hammer. The solder was then melted with a small torch, in this case an ordinary match!

Not the most highly recommended method of

making an electrical joint, but certainly one worth remembering when an emergency arises.

— Robert Carpenter

One simple method of preventing damage to a polystyrene coil form during soldering is to insert the form in an inexpensive wafer socket before applying heat from the iron. The socket does carry off some of the heat that would otherwise reach the prongs, but it makes up for this by maintaining the prongs in perfect alignment.

Here at W0SGG, we mount the socket/sockets in a sheet of material that can be clamped in the bench vise, thus taking care of the problem of holding the coil form while working on it.

— Otto Woolley, W0SGG

Here is another method of protecting polystyrene coil forms against heat.

When ready to solder, stand the form on its end with the prongs sticking up. Wrap a piece of half-inch masking tape around the form with its uppermost edge protruding up over the prong end by approximately $\frac{3}{16}$ inch. Using a teaspoon, fill the walled-in area around the prongs with water.

You can now apply heat and solder to the prongs without too much danger of the form melting and the prongs becoming misaligned.

— Alexander McGlashan, K2GIN

When removing the base from a plug-in coil, tube, or multiwire connector, it is always helpful if the prongs involved can all be unsoldered at the same time. Use of a homemade ring tip such as illustrated in Fig. 2 will allow all prongs to be

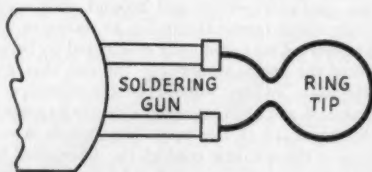


Fig. 2—Illustration of the ring tip used by W1MWO for simultaneously unsoldering a number of base prongs.

heated simultaneously.

The ring tip is made with Tinned No. 12 or 14 copper wire. The loop should be just large enough in diameter to encircle the ring of prongs that require heat, and the leads to the soldering gun should be as short as possible.

This method can also be used to unsolder canned components by forming the tip properly.

— Harry Star, W1MWO

A tinned copper wire extension added to the regular tip of a gun type iron will facilitate soldering in some seemingly inaccessible places.

Clean and tin the wire extension and then bend

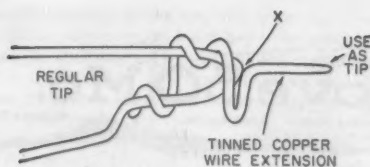


Fig. 3—Sketch showing how W5CYF extends the usefulness of a soldering gun by extending the length of the tip.

it tightly around the main tip as shown in Fig. 3. Make very sure that the tips are clean and in good contact at point marked X, and add a little solder at this junction to assure maximum transfer of heat.

The extension may now be bent into a shape best suited for the job. Of course, the wire will not transfer enough heat for heavy soldering operations, but it does permit doing many light jobs located in hard-to-get-at spots.

— Edwin B. Robertson, W5CYF

The accompanying photograph, Fig. 4, is an open-for-inspection view of a soldering aid that has seen factory use for the past four years. The aid has so speeded soldering operations that we simply litter the bench with them so that whenever we reach for solder—it's there.

The aid consists of small diameter solder wound on the film spool of a 35 mm. film cassette. Up to four layers of solder may be wound if a 36-exposure cassette is used. When reassembling the unit, make certain that the solder feeds through the velvet lined slot properly by aligning the slot with the solder lead. Otherwise, the solder will not release easily. A small hole is drilled in the spool to hold the starting end for ease of winding.

Cassettes may be obtained from some film processing companies at no cost because they are not normally reused after the film is developed.

Incidentally, Kester Company puts out an excellent booklet on the subject of soldering. A copy makes good reading for anyone interested in the proper application of solder.

— James R. Grace, W00JS

Editor's Note: Newcomers interested in learning

about proper soldering methods should also review "How's Your Soldering?," QST, September, 1957.

A handy *unsoldering* accessory is a tool made from an old hacksaw blade. The surplus scavenger will find it practically indispensable and, if he has a power grinder available, it can be made in a new minutes.

The shape of the *unsoldering aid* is shown in Fig. 5. Remove the teeth from the blade while the grinder is turning over and, of course, make the tool long enough to permit a good grip. Adhesive tape of one type or another may be

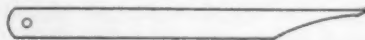


Fig. 5—An illustration of the unsoldering aid suggested by W7JJP. The tool is made from a hacksaw blade.

used to cover the handle part, but do not cover up the hole at the grip end. Just remember to use that hole to good advantage—slip it over a nail driven high in the wall—if you have any junior ops that can creep into the workshop!

— Rudy Erickson, W7JJP

SAVE THAT OLD MASCARA BRUSH

THE XYL's old mascara brush, when dipped in a little carbon tet, is ideal for cleaning relay contacts, volume controls, switch contacts and other radio parts.

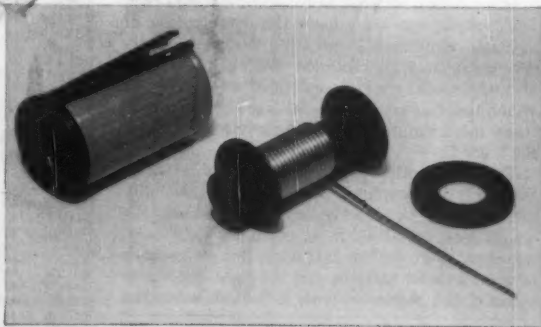
— Ronald Litt, K2KMA

REMOVING GUY WIRE AND GROUND STAKES

WHEN you next run across a guy wire or ground stake that won't pull up after a few mighty heaves, put the automobile bumper jack to work. As long as the stake or rod has a clamp or other surface to which force may be exerted, it is fairly certain that it will move after a few strokes on the jack handle.

— Harry M. Engwicht, W6HC

Fig. 4—An open-for-inspection view of the soldering aid made from a 35 mm. film cassette. W00JS gives construction details in the text.



The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

WILL the 2540-mile 144-Mc. record ever be broken?

When the previous record of 1400 miles was set back in 1950, it appeared highly unlikely that it would ever be extended by any great amount. The W5QNL-W6ZL QSO, like others made at the same time over slightly shorter distances, was deemed to have been the result of very dense E-layer ionization. Going much over 1400 miles by this means seems a remote possibility, and double-hop propagation (which might mean a haul of 2500 miles or more) would involve a fantastic combination of perseverance and good luck. Tropospheric propagation? We'd had some out to 1200 miles or more, but nobody gave it a chance to go much farther.

Moonbounce techniques were then in their infancy. They've advanced some since, but we're still a long way from substantial success in that department, at least within the amateur power limit. A newer technique, ionospheric scatter, may just work at 144 Mc., though it is far more promising at 50. Meteor scatter can provide communication of sorts, but like ionospheric scatter and sporadic-E skip, it appears to be limited to something under 1500 miles.

That tropospheric propagation, first-known of all v.h.f. DX phenomena, could provide communication over distances of record proportions was hardly suspected until July 8 of last year, when W6NLZ and KH6UK achieved their first success over the Pacific from the West Coast to Hawaii. But they did it twice, proving that it was no fluke. Can we do better? What will it take, if so?

People who should know say that the tropospheric conditions that made possible these 2540-mile QSOs can extend even farther than Hawaii — but where west of Oahu would you find another KH6UK? And as for the Mainland end, few 2-meter operators have the combination of location, equipment, operating savvy and perseverance that characterize W6NLZ. Conceivably the record could be extended a few miles at either end, but what we're talking about is something more significant than a mere stretching of the record.

There are other places in the world where favorable tropospheric conditions occasionally prevail over very considerable distances. We would look for these most often on long over-water paths in the low latitudes, but coincidence of good 2-meter stations and the right conditions seems a slim chance at best, in latitudes near the

equator. UT3AE, Madeira Islands, has expressed interest in trying, but he may be low on power. A remote chance, but perhaps one most



1 W0ZJB	11 W2IDZ	21 K6EDX	31 K0GQG
2 W0BJV	12 W1LL	22 W5FW	32 W7FFE
3 W0CJS	13 W0DZM	23 W0ORE	33 W0PFP
4 W5AJG	14 W0HVV	24 W9ALU	34 W6BJI
5 W9ZHL	15 W0WKB	25 W4CWS	35 W2MEU
6 W0ACA	16 W0SMJ	26 W0MVG	36 W1CLS
7 W6OB	17 W0OGW	27 W0CNM	37 W6PUZ
8 W0INI	18 W7ERA	28 W1VNH	38 W7ILL
9 W1HDQ	19 W30JU	29 W0OLY	
10 W5MJD	20 W6TMI	30 W7HEA	

W1FOS	47	W4AKX	42	W7FIV	41	K0JJA	47
W1CGY	46	W1RFR	42	W7CAM	40	W0IBL	46
W1LSN	46	K4DNG	41	W7MKW	40	W0JOL	46
W1AEP	46	W40XC	41	W7YJE	38	W0USQ	45
W1SUZ	46	W4ZBQ	41	W7QDJ	34	W0FKY	45
W1RPU	45	K4GYZ	41	W7UFB	33	W0QVZ	45
W1ELP	44	W4FNR	40			W0QFZ	44
W1KHL	44			W8WPD	47	W0YJF	44
W1LGE	42	W5VY	48	W8NOH	47	W0URQ	44
W1PZ	42	W5LFQ	47	W8OJN	46	W0BTG	43
W1FVZ	41	W5GNQ	46	W8SQU	46	K0GKR	43
W1IKO	40	W5FSC	45	W8HXT	46	W0JHS	43
W1CLH	40	W5ONS	45	W8NQD	45	W0PI	43
		W5JLY	45	W8UZ	45	K0DXS	43
W2RGV	47	W5ML	44	W8RFW	45	W0WNU	42
K2JNS	46	W5EXZ	43	W8PLD	44	K0CLJ	41
W2AMJ	46	W5VY	43	W8HJR	44	W0PKD	41
W2BYM	46	W5FXN	43	K8ACC	43	K0AKJ	40
W2FJH	46	W5JME	42	W8SES	42		
K2CBA	45	W5CVW	41	K5CIC	42	VE3AET	47
W2SHV	45	W5FAL	41	W8EVH	42	VE7CN	44
K2AXQ	43	W5HEZ	41	W8YLS	41	VE1EF	38
K2ITQ	43	W5BXA	41	W8INQ	40	VE3AIB	37
K2ITP	43	K5ABW	40			E1ZW	35
K2LTW	41			W0BRN	48	VE3BX	33
W2ORA	40	W6WNN	48	W0ZHB	48	VE3BHQ	32
		W6UXN	48	W0QUV	48	VE1QY	32
W3TIF	47	W6BAZ	47	W0VZP	47	VE1PO	31
W3KKN	46	K0JCA	47	W0RQM	47	VE2AOM	31
W3KMW	45	W6JKN	46	W0QKM	47	VE3DER	31
W3RUE	42	W6ANN	45	W0JFP	47	SM7ZN	29
W3NKM	41	W6NDP	45	W0SDP	46	CO2ZX	27
W3MQU	41	W6ABN	45	W9AAG	46	XE1GE	27
W3MXX	41	K6JTC	44	W0JLA	45	VE1WL	28
W3OTC	41	K6RNQ	43	W0UNS	45	PZ1AE	26
W3FFH	40	W6GCG	43	W0MHP	43	SM6ANR	24
W3LFC	40	K6HYY	43	W0SWH	43	SM6BTT	23
		W6NIT	42	W0MHP	43	VE1ZR	23
W4EQM	47	W6IWS	41	W0KLR	43	VE3OJ	22
W4UCH	47	W6CAN	40	K0EID	43	CO6WW	21
W4UMF	47	K6ERG	40	W0JCT	42	LAP	20
W4FBH	46	W6BWG	40	W0MFB	42	VE4HS	20
K4DGO	46			W0SWH	42	K0GUK	17
W4EQR	46	W7BQM	47	W0EPT	41	VQ2PL	19
W4AZC	45	W7DYD	47	W0IMG	41	J1A1UH	16
W4LNG	45	W7INX	47			LU9MA	10
W4CPZ	45	W7ACD	46	W0QIN	47	JASBU	14
W4FLW	45	W7FDJ	46	W0NFM	47	ZE2JV	12
W4MS	44	W7JPA	44	W0TKX	47	J1A1AT	12
K4HOB	44	W7JRG	44	W0KYF	47		
W4QN	44	W7BOC	42	W0ZTW	47		

* V.H.F. Editor, QST.

worth bearing down on, lies over the North Atlantic. Here we at least have the stations, if not the conditions. Do we have the operators?

A transatlantic 2-meter QSO won't just happen, because a few tries are made, now and then. If it ever comes off, it will probably be the result of intensive long-term effort like that made by KH6UK and W6NLZ. There will be schedules, kept religiously and at all hours. There will be the ultimate in equipment, within amateur limits, at both ends. And there will also be phenomenal good luck!

At least a few stations have setups that offer some hope of success. At this side of the Atlantic there are plenty of kilowatts and big antennas. Presumably there are also operators — and probably these are most important. In Europe most countries have power limits that are discouraging, but some special IGY authorizations may help out. We know that at least one British station, GB3IGY, has a 1-kw. authorization on a temporary basis, an excellent location and a first-class operator, G5KW. From PA0AFN, now living in this country, we learn that PE1PL, a laboratory station operated by a group of people interested in propagation experiments, will soon have a high-powered 144-Mc. station on the air. They have a fine dunes location near The Hague, with a view out over the North Sea. And in Germany, DL4WW, well known to American 2-meter enthusiasts as W3YHI, is on with the legal power limit, 500 watts.

There are undoubtedly many others who are eager to work on the possibility of pushing a 2-meter signal across the Atlantic. The International V.H.F. Society tried it some years ago, and they could very likely be talked into giving it another go. A spot on the Irish Coast might be a very favorable site from which to try, too. The main thing would seem to be to *try*, and right now is the time to start.

50-Mc. DX News

Being in between the F_2 and E seasons as we write, DX news on 6 is a bit light this month. There was little worldwide DX activity after the first half of April, and as far as U. S. 6-meter men were concerned this was confined to work between California and Australia and New Zealand. There were a few smatterings of South American DX there and elsewhere, but mostly the 6-meter band was getting set for its early summer binge of sporadic-E.

A new country-to-country first was made April 5 when Z86UR worked HB9BZ at 1206 to 1215 GMT. They were in contact again from 1230 to 1256, and from that time to 1300, Z86UR worked HB9QQ. Our thanks to K2IRK, W8BXM and Z86TB for relaying this information, via a lower band.

If you haven't worked Northern Rhodesia by now, the chances are slim that you will catch it on 50 Mc. for a long time to come. Peter Lowth, VQ2PL, the only amateur in that country known to have operated on 50 Mc., will be in Bulawayo, Southern Rhodesia, by the time this appears in print. A veteran of 50-Mc. DX through two sunspot cycles, Peter made a fine contribution to the advancement of the 6-meter cause. He was one of the few African operators to work into Europe on 50 Mc. in 1947, and when the first breakthrough to North America came in 1957, VQ2PL was in there. He worked 18 states in W2, 3, 4, 5, 6, 8, 9 and 0. We wish you luck as a ZE, Peter, but let's hope you get back to VQ2 soon!

West Coast stations had a fine time of it with the ZIs and VKs through March and early April. The last DX report we have is from W6BAZ, Santa Rosa, who says the

band was open to South America the 15th and to New Zealand the 16th. An interesting summary of Australian work comes from W. G. Francis, East Newborough, Victoria. He says that all Australian states are active on 6, the interest building up quickly with the official permission to

2-METER STANDINGS

U. S.				U. S.			
States	Areas	Miles		States	Areas	Miles	
WIREZ...	28	8	1080	W5KTD...	10	4	760
W1AZK...	22	7	1205	W5NDE...	8	3	520
W1KCS...	22	7	1150	W5FEK...	8	2	580
W1RPU...	22	7	1120	W5VY...	7	3	1200
W1AJR...	21	7	1130				
W1FZJ...	21	6	1120	W6NLZ...	9	3	2540
W1OAX...	21	6	800	W6WSQ...	8	4	1380
W1HDC...	20	6	1020	W6DNG...	8	3	1030
W1MMN...	19	6	800	W6AJF...	5	2	640
W1IZY...	17	6	750	W6RRZ...	4	2	360
W1UIZ...	17	5	680	W6PJA...	4	3	1390
W1AFO...	17	6	920	W6ZL...	3	2	1400
W1ZQJ...	17	6	800	W6BAZ...	3	2	400
W1PHR...	16	6	790	W6MMU...	3	2	388
W1BCN...	16	6	650	W6DRY...	4	2	965
W1KHL...	16	5	540	W6LSB...	2	2	360
W2NLY...	34	8	1390	W7VMP...	11	5	1280
W2CKY...	34	8	1200	W7LEE...	6	3	1020
W2ORI...	34	8	1200	W7JRG...	4	3	1040
W2AZL...	28	8	1050	W7LHL...	4	2	1050
K2GQL...	25	950		W7JTB...	4	2	900
K2IEJ...	24	7	1060	W7JU...	2	2	353
W2BLV...	23	7	1020	W7YZU...	3	2	240
K2HOD...	23	7	950				
W2OPL...	22	7	720	W8KAY...	36	8	1020
W2OPQ...	22	7	1050	W8WVX...	35	8	1200
W2SMX...	22	6	905	W8LOF...	31	8	1060
W2AMJ...	21	6	960	W8RMB...	31	8	1000
W2WRI...	21	7	880	W8SVL...	30	8	1080
K2CEH...	21	8	910	W8SFG...	30	8	100
K2IXJ...	21	6	925	W8PT...	29	8	985
W2CHB...	21	6	800	W8WV...	28	8	680
W2LWL...	20	6	700	W8SRW...	27	7	850
W2AOC...	20	6	770	W8JWV...	25	8	940
W2PAU...	20	6	880	W8LLC...	25	8	800
W2RXC...	20	6	700	W8LFD...	25	8	750
W2UTH...	19	7	880	W8DX...	23	7	820
W2AZP...	19	7	650	W8EHW...	25	8	860
W2RGV...	19	6	720	W8SAX...	23	8	675
W2LJC...	18	6	620	W8LCH...	20	6	610
K2RLG...	17	6	910	W8NOH...	19	7	600
W2SHT...	16	6	650	W8CZY...	17	7	970
W2PCQ...	16	5	650	W8RWV...	17	7	630
W3RUE...	30	8	950	W9KLR...	37	8	1160
W3BGT...	28	8	740	W9WOK...	32	9	1050
W3TDF...	27	8	880	W9GAB...	29	8	1075
W3GKG...	27	7	1020	W9FCG...	27	8	900
W3SGA...	26	6	550	W9REM...	27	8	850
W3IBH...	23	7	650	W9ZIH...	27	8	830
W3FPH...	21	8	—	W9UIC...	27	8	750
W3KCA...	21	7	—	W9EVL...	27	8	850
W3LNA...	20	7	720	W9EQC...	26	8	820
W3LZD...	20	7	—	W9ZHL...	25	8	760
W3KWL...	19	7	740	W9BHX...	24	7	725
W3NKM...	19	8	660	W9BPD...	23	7	1000
W3BNC...	18	7	750	W9UED...	22	7	960
				W9KPS...	22	7	690
W4HJQ...	34	8	1140	W9PRP...	20	5	820
W4HHK...	33	9	1280	W9MUD...	19	7	640
W4AO...	29	8	1100	W9LF...	19	6	—
W4LTU...	27	8	1160	K9AQP...	18	8	725
W4UMF...	27	8	1110	W9ALU...	18	7	820
W4MKJ...	24	8	725	W9MGA...	18	6	720
W4JCV...	22	6	660	W9MBI...	16	7	660
W4EQM...	21	8	900	W9DDG...	16	6	700
W4DWU...	20	6	675	W9JTY...	16	7	560
W4OLK...	19	6	720	W9LEE...	15	6	720
W4TLV...	18	7	1000	W9DSP...	15	6	760
W4JFV...	18	7	850				
W4IKZ...	18	6	720	W0HND...	27	7	890
W4VLA...	17	7	825	W0GUD...	25	7	1065
W4WNH...	17	7	750	W0DOK...	22	8	920
K4EUS...	17	6	660	W0BFB...	21	8	1060
W4ABJ...	16	7	720	W0TGC...	21	8	900
W4CLY...	15	5	720	W0SMJ...	20	7	1000
W2BHS/4...	14	7	650	W0INI...	20	6	830
W4ZUF...	14	5	800	W0BZ...	19	7	700
W4TCR...	14	5	720	W0TOP...	18	6	—
W4SOP...	13	5	680	W0NQC...	16	6	1000
W4CPZ...	12	5	650	W0RYG...	17	6	925
W4MDA...	11	5	860	W0MJB...	15	5	1200
W4KCG...	10	4	860	W0ISG...	14	6	750
W4LNG...	9	4	800	W0IFS...	14	5	—
W4GIS...	9	2	335	W0DAC...	14	5	725
				W0RYG...	14	5	820
W5RCI...	33	9	1215	W0MYG...	13	5	700
W5DFU...	25	9	1300	W0TJF...	13	4	—
W5AJG...	22	8	1280	W0IC...	4	2	950
W5JVL...	18	7	1150				
W5LPG...	16	6	1000	VE3DIR...	26	8	915
W5VKH...	15	5	720	VE3AIB...	26	7	910
W5MMW...	14	5	700	VE3BQ...	17	7	790
W5ML...	14	4	700	VE3EDR...	16	7	820
W5FSC...	12	5	1390	VE3AQC...	13	7	800
W5ABN...	12	5	780	VE3BPH...	13	6	715
W5PZ...	12	5	1255	VE3AOK...	12	5	850
W5QY...	10	4	1400	VE3QY...	11	4	810
W5CVW...	10	5	1180	VE7FJ...	2	1	365
W5SWV...	10	3	600	KH6UK...	1	2	2540

use the 6-meter band again, beginning Oct. 8. JAs were heard on 50 Mc. last July, and some crossband contacts were made 28-50 and even 56-50, before the 50-Mc. band was reopened for the duration of the IGY. VKs also may work 56 to 60 Mc., but not many have done so, understandably, since October. VK4NG, Rockhampton, made the first JA contacts two-way Oct. 9, and in the next 15 days worked 151 JAs in all call areas except JA8, which was worked in February.

VK6BE was the first Western Australian station to work into Japan, getting through in early March. VK3ALZ and VK3PG made the first JA contacts from their area Feb. 10. VK5s MT MK RO QR EF and ZAW made the first VK5-JA contacts Feb. 2. VK7AB, Tasmania, made it in January, with JA1AXE. Through the whole summer (winter to us who are north of the equator) VK3s in the Melbourne area could hear VK4s in Queensland, to the north, working JAs, but nothing could be heard of the DX until February. Sporadic-E work was done with ZLs during the Christmas season, and many interstate aurora contacts were made Feb. 11.

Via W2LKW we have a report from VK0KT, Macquarie Island, to the effect that he operates on 50.19 Mc. at 0200, 0500, 1000 and 1100 GMT, Saturdays and Sundays. He heard W6UQ?, San Fernando Valley, Sunday, March 30, at 0149 GMT. A project scheduled for the latter part of June involves sending aloft a 50-Mc.-equipped balloon, which is expected to reach 60,000 to 70,000 feet. More information on this can be obtained from VK0KT on 2.12 Mc. George is on almost daily, beginning at 0100 EST.

K6RNQ, Oakland, Cal., has made a 50-Mc. ZL WAS, and he believes that this feat, completed in March, may have been the first from this country. Bob found the band open to New Zealand Feb. 1, 7, 20, 21, 22, 23, 28, and 19 days in March, and on April 2. He worked VK4s NG HD ZAZ and ZBF on March 15, and VK4XJ March 20.

The first VK-W 50-Mc. QSO, so far as is known, was made March 15 by VK4NG and W6BJI, at 1622 PST. The band opened again the same day, around 2050, and VK4NG worked K6ERG, K6PXT, K6RNQ, W6RLB, K6MMT and W6WWD between then and 2130. The lateness of this second session points to TE propagation. VK4NG reports that JAs were in during all this time. He also heard W0CNM, Grand Junction, Colo., and two W7s in Salt Lake City, but was unable to break through the W6 QRM these fellows were experiencing.

"Record, record, who's got the record?" With 50-Mc. DX reaching out to almost exactly half-way around the world, it is not easy to sort out the record holders these days. For some time, we have recognized LU3EX and JA6FR as co-holders, their distance checking out (by our methods) at almost exactly 12,000 miles. But the Brazilian IARU Society, LABRE, claims PY2AXX and JA6FR as the most widely-separated 6-meter stations to have made contact. Now, to confuse the issue further, JA1AN, who coordinates v.h.f. activities for JARL, reports a "new record" contact between JA3EK and PY3BW, made on March 16. When the bearings in our slide rule cool down we'll have to come up with an answer. The irony of it is that U. S. stations are not likely ever to be involved in this controversy again, Japan and South America being situated not only

half a world apart, but also in the two spots on the earth's surface that seem most blessed with high F_2 m.u.f. and transequatorial scatter!

If there is transatlantic 50-Mc. DX next fall we should have at least one new country to work. Word has just been received from OH0NC that the Finnish Society, SRAL, and the licensing authority have announced that Finnish amateurs are permitted to use 50 to 54 Mc. in the period May 1 through December 31, 1958. Sam says he will be on with s.a.b. on the low edge, probably with a pair of 4X150s.

420 Mc. and Up

Consistent activity on 432 Mc. is reported by W8JLQ, Toledo, Ohio. Howard supplies the following list of stations and equipment: W8HRC, Detroit — 2C39 final, 18 watts output, 432.19 Mc., phone and c.w. Antenna is 24 elements, driven, with screen reflector. W8RQI, Toledo — 5894 final, 15 watts output, 432.66 Mc., phone and c.w. Antenna: 96-element collinear. W8JLQ, Toledo — 2C39 tripler driving 2C39 final, 18 watts output, 432.68 Mc., phone and c.w. Antenna: 96 — element collinear. W8TYT, Columbus — 5894 final, 15 watts output, 432.32 Mc., phone and c.w. Antenna: 15-element long Yagi. These stations are active nightly.

Others operating two to four nights per week include: K8AIY, Detroit — 5894, 15 watts output, 432.15 Mc. with 15-element long Yagi. W8UCT, Detroit — 2C39, 18 watts output, 432.3 Mc., with 24-element collinear. W8RLT, Detroit — 4X150, 50 watts input, 432.57 Mc., 24 elements driven, with screen reflector. W8DAU, Columbus — 4X250B, 432.45 Mc., phone and c.w., 13-element Yagi.

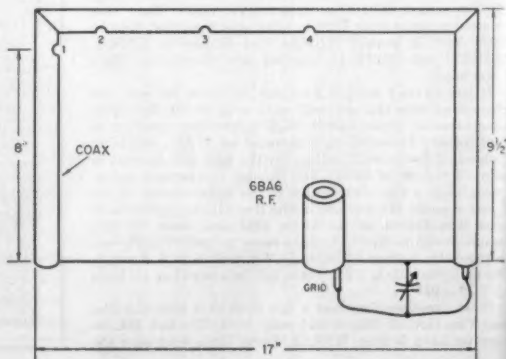
Heard occasionally are W8DX, Detroit, with a 4X150 on 432.08 Mc., feeding a 45-element stacked-Yagi array, and W8HBB, Detroit, with a 2C39 on 432.12 Mc. In the works: K8DWW, Detroit, W8VCO and W8UST, Toledo, W8HCC, Sandusky, and W8VOZ, Van Buren.

Amateurs of Southern California who are interested in microwave communication will want to take in a special meeting of the San Bernardino Microwave Society. A Symposium on microwave communication will be held, which will include a two-hour session covering past and present progress in this field. Speakers will discuss general microwave theory and constructional details of equipment currently in use, much of which has been or will be the subject of QST articles by members of the SBMS. Talks will include slides and demonstrations. Date: June 5. Time: 7:30 p.m. Place: Chaffee College Annex (A-15), Euclid Ave., Ontario, Calif.

Coaxial Tank for 50 Mc.

When W4IKK moved to Signal Mountain, Tenn., he got a fine v.h.f. location, but along with it he took on a formidable overloading problem. Mountain tops have a way of being well supplied with v.h.f. stations of various services these days. Bill has Channels 3 and 9 a mile to the north. Channel 12 $1\frac{1}{4}$ miles south, and a gas company f.m. station on 49.6 Mc. close by. Each of these is bad enough, but together, and in combination with strong amateur signals, they create all kinds of spurious responses in a conventional 50-Mc. converter.

Coaxial tank circuit used on 50 Mc. by W4IKK
U shape was employed to permit mounting on
a standard chassis.



Originally the W4IKK converter had a 6BK7A cascade stage ahead of a 6BA6 r.f. with conventional circuits. Taking out the cascade, and installing a coaxial tank in the 6BA6 grid circuit cost a few db. in noise figure, but there is still some 3 db. of antenna noise left, so the sensitivity is more than adequate. Actually, getting rid of most of the overloading effects improved the effective sensitivity of the converter noticeably.

The coaxial tank was made from 3/4-inch copper coaxial line of the rigid variety having a 1/4-inch inner conductor supported on ceramic beads. These dimensions are not particularly critical, and it would be no great problem to make your own, if you don't have access to the readymade variety. Bill started with 36 inches of the coax, and cut it at 9 1/4 inches to make the right-angle bends shown in the drawing. The reason for these was to get the tank onto a standard 17-inch chassis.

Tapping a 50-ohm antenna link onto the tank at the various holes shown gave the following results: Hole 1 — good noise figure over about 800 kc., and usable to 1 1/2 Mc. Hole 2, 12 inches from the shorted end — best noise figure of any point, and good over about 2 Mc. Optimum n.f. held over 1 Mc. Holes 3 and 4, 16 and 20 inches from the shorted end, gave progressively poorer noise figures and greater band width, with less effective rejection of spurious signals. The tank is tunable from the front of the converter, so the selectivity is no problem. Bill feels that connection at hole 1 or hole 2 is O.K., depending on the severity of the interference problem, with hole 2 being optimum for most users.

Prior to the installation of the coaxial tank, reception was marred by the TV signals beating in various low-frequency signals, and there was f.m. hash at an 88 level, peaking around 50.1 Mc. When 50-Mc. signals reached levels over about 9-plus-30 they had TV birdies on either side. West Coast signals often reached or exceeded this overload level during F₂ openings. With the coaxial tank installed (and the cascade stage eliminated) there is very little trouble of any kind. The noise generator says the converter noise figure is somewhat higher than when the cascade was used, but reception of weak signals is vastly improved.

Clubs and Nets

Should a v.h.f. net operate if the band to be used is open for DX at the time the net is scheduled to convene? This question often comes up, and it puts the NCS on the spot. Somebody is sure to object, whichever way he decides. As we see it, the answer depends a good deal on the nature of the net. If the operation is a RACES drill, there should be no question. It should take place on time, regardless of conditions. In fact, it is important that such a net know its limitations under QRM conditions, and it is the duty of each member to do his part.

If the net is a formal one, devoted to emergency work and preparedness for same, it probably should carry through on schedule, too, particularly if the operating frequency is (as it should be) outside the part of the band in which most DX is worked.

If the net is informal, devoted mainly to general information exchange, we feel that it is up to the members of the net themselves to decide whether they want to stay with the net. A decision on policy should be made by vote of participants, so that the NCS will know what to do. If the decision is to cancel net operation during DX openings, as a matter of general policy, then it should be left with the NCS to decide whether conditions at net time warrant cancellation. If so, he should make a transmission to that effect to inform net members.

Such a net, if it is to operate regardless of propagation conditions, should have a net frequency that is above the DX portion of the band in question. There are too many nets operating at 50.4 or lower, for example. They have little chance of functioning successfully if the band is open, unless they move higher in the band. The situation is less critical on 144 Mc., but the basic idea still applies.

Something new in hidden stations was pulled on the unsuspecting members of the Milwaukee 6-Meter Net in a recent hunt. The hidden station was a Communicator, connected to the antenna at one of the Milwaukee Police radio stations, 300 feet up in the air. Operators were W9ESB and her husband, whose call does not appear in the report we have. First hunter to brave the Police Station entrance was K9KCU, closely followed by W9ROS and K9IUA.

The v.h.f. picnic season is coming up. Here are two such

events scheduled for July: The Annual Turkey Run V.H.F. Picnic, an old-timer in the field, will be held July 27. Place, as always, is the Turkey Run State Park, near Terre Haute, Ind. This is a family affair, with fun for all. More information from W9ZHL, Bowling Green, Mo., will be the scene of a similar party July 13. Ed Porter, W0ZFE, says you're all invited.

The recently-organized Greater Cleveland 6-Meter Club is now providing code-practice sessions nightly, 1900 to 1930, on the net frequency, 50.85. Transmissions are made with tone modulation, for easy copy on all types of receivers.

OES Notes

W1AHE, Stow, Mass. — Will be operating on 144 and possibly 220 Mc. from Lincolnville, Maine, week ends through summer and early fall. Forty-element beam for 144 Mc. about ready to go at that location.

W1SUZ, Colebrook, Conn. — Detailed observation of band conditions on 50 Mc. shows marked 27-day cycle effects, in F₂, TE, E, and auroral propagation.

W3GKP, Spencerville, Md. — W4LTU having moved to Falls Church, Va., meteor skeds are now kept with W4RMU, Oceanway, Fla., nightly at 2200. His frequency: 144.09 Mc.

Keeping record of voltage fluctuations on telephone line, as possible indication of aurora. Would be glad to hear from others with experience in this field.

W3JWZ, Glenahoe, Pa. — Good quality TV being transmitted by W3QVY, Fox Chapel, to W3MQT, Monroeville, an 11-mile path. Gear uses modified AXT-2 transmitter and ASB-7 receiver.

W4HHK, Collierville, Tenn. — Continuing daily observation of compass readings. Maximum change thus far observed was 3/4 degree east, noted on March 24, 26, 28 and 29. Correlation with auroral effects observed on v.h.f. bands still not conclusive.

W7BDK, Seattle, Wash. — Working on 1296-Mc. converter. Uses crystal mixer, 1N21, with injection string consisting of 12AT7 and 6AK5 oscillator-multiplier to 311.5 Mc. driving CK715 crystal multiplier to 1245 Mc. I.f. output at 50 Mc. feeds low-noise converter at that frequency. Also experimenting with homemade parabolas, for best combination of light weight, sturdy construction and gain.

W7EPZ, Billings, Mont. — Have heard East Coast station calling "CQ Montana" but could not raise them on 50.46 Mc. Some stations called were operating at or higher than this frequency!

W8WRN, Columbus, Ohio — W8TYY working W8JLQ, Toledo, and W8HRC, Detroit, on 432 Mc. W8CSW works W9HLY, Decatur, Ind., almost nightly on 220 Mc., though W9HLY runs only 10 watts input. Several of local gang working on 220-Mc. gear.

K9GAJ, Fond du Lac, Wis. — Fox River Valley 6-Meter Net invites participation by all stations within range. Operation is on Monday and Wednesday at 2100 CST. Frequency: 50.1 Mc.

W9JIY, Indianapolis, Ind. — Working cross-band duplex with W9MHP, 220-51 Mc. Operation on different bands makes for excellent duplex results. Also working K9GWP, Bloomington, nightly on 220 at 1900. Other locals becoming convinced that 220 does work, after demonstration on these circuits.

W9LVC, Beloit, Wis. — Silver-plating tank circuit in 1-kw. amplifier using 4-125As on 144 Mc. raised output by 100 watts, as indicated on Micromatch. With 37-foot Yagi at 80 feet now make nightly contacts with W8SDJ, 10 miles north on Cincinnati, more than 300 miles. On 432 Mc., have heard W9FRN, near Chicago with good signals. Antenna on 432 is a 16-element Yagis. A 416B preamp is built into the antenna.

K9ABK, St. Louis, Mo. — Would like to work on 420 if there are others locally who will go along.

W9MOX, Overland Park, Kan. — Had opportunity to borrow General Radio Admittance Meter for use in adjusting 2-meter array. Being a direct-reading device showing resistive and reactive components, with the sign of the reactive term, it really cuts adjustment time.

LATE REPORT — First ZL-W4 50-Mc. QSO. Just after this copy was made up word was received of additional 50-Mc. DX to New Zealand. W4CQP, Hollywood, Fla., worked ZL2DS April 22, at 1710 EST. This is the first reported work with ZL outside W6.

YL News and Views

CONDUCTED BY ELEANOR WILSON,* W1QON

RESULTS: NINTH ANNUAL YL-OM CONTEST

Some 300 YLs and 1500 OMs participated in the YL-OM Contest sponsored by the Young Ladies Radio League the first and third week ends in March. Approximately 400 more OMs participated in this year's contest than last year, while the number of YL contestants remained about the same as in 1957. One hundred-forty-nine phone logs and 120 c.w. logs were received from OMs (91 phone and 99 c.w. last year). Eighty-one phone logs and 51 c.w. logs were submitted by YLs (73 phone and 54 c.w. last year). These figures represent logs received for scoring; numerous logs were submitted for checking purposes only.

YLRL Vice President and chief log-checker Kay Anderson, W4BLR, concluded: "Scores

*YL Editor, QST. Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.



Second place phone winner in the contest was one of our Alaskan YLs—KL7BHE, Sheila Goodhue of Anchorage. Licensed in 1954, Sheila does a lot of operating with WAC, WBE, YLCC, and has an application for DXCC to her credit. Her rig is a B & W 5100 and a 75A-4 with three element beams on 10 and 20 and a five element on 15 meters. Favored frequencies are 21,380 and 28,625 kc. Sheila and her OM, KL7PIV, drove 60 miles with their two young daughters to Portage Glacier to take this photo with "authentic Alaskan background." Sheila's handsome parka was made of Arctic squirrel, which she tells us the Eskimos call "sic-sic-puk." Sheila operated in Dayton, Ohio, in 1955 as W8EBM, but she now hopes to be a permanent KL7.



First place YL phone winner W5DRJ, Dena Morgan, of Brookhaven, Mississippi, was second place phone scorer in last year's YL-OM contest. She operated on several bands, using a B & W 5100 and a Collins 75A-3 receiver for a winning rig. Dena concluded that while she enjoyed the contest very much, she was glad when it was over because her OM, W5DQK, and her three children "fared too well without (her)." Last year Dena worked 133 countries on phone, and she has applied for DXCC.

were higher than ever before. Fifteen meters was again the most popular band with ten a close second. Activity was reported on all bands from 160 to 2 meters. Eighty c.w. has been losing its popularity among the testers. Most preferred to stay on twenty or forty during the night hopping to catch new multipliers rather than pile up numbers."

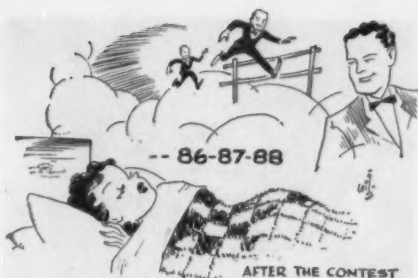
Some of the comments W4BLR received accompanying the logs afford chuckles and food for thought:

From the OMs — "My first contest, was surprised to find such good YL operators on c.w." — "The only time in the year that the ladies will talk to me" — "Couldn't we

Edith Viburg, W9WZL, of Milwaukee, was third place YL c.w. winner. Licensed in 1953 Edie is employed as a technician at Centralab. Excepting her NC-300 receiver,



she has built all of her radio gear herself. She constructed her electronic keyer according to a Dec. '54 QST article, and she uses a separate antenna on the receiver and keys the oscillator allowing full break-in operation. She uses a longwire for 40 and 80 meters and a vertical ground plane for 20 meters. Edie's husband and daughter are "tolerant of ham radio, but they don't share her enthusiasm."



forget signal reports and exchange names instead?" — "Wish we could work the YLs again on other bands. It's a long, long wait with the YLs being so scattered and the hours so long." — "Heard a woman-hater on calling 'CQYL' half the night. QRMing me, too." — "Had fun as always, but the XYL is mad, the neighbors think I'm nuts. All this for only 50 YLs." — "I missed the best operating hours because the XYL picked that time to go to the hospital and have a baby!" — "Was a real thrill finding OQ5IE and G2YL. Hope more DX gals will enter next year."

From the YLs — "The OMs sure were wonderful, waiting in line, trying to copy us thru the QRM. Thanks to all those who gave a number even tho' they weren't in the contest." — "Had more fun explaining the contest to OMs in Germany, Spain, etc. then hearing them go off frequency and call 'CQ-YL'." — "I was going to operate all night, but the baby got the croup." — "Couldn't we shorten the hours? I wanted to get some sleep but everytime I started to leave, I'd hear some gal with a higher number so I'd go back to 'CQ-OM' again." — "The fellows were grand. Just love 'em all."

Six of this year's place winners were also among the winners last year — YLs W5DRI, K5BNQ, W1RLQ and OMs W8AJW, W7SFK, and K2DSW. John Siring, W8AJW, has been a top YL-OM contest scorer since 1952. He has won second phone honors three times, first phone twice, and first c.w. twice.

Cups have been awarded to the YL and OM placing first in each category, phone and c.w. Certificates have been awarded to second and third place phone and c.w. winners. Certificates have been issued to the highest scoring contestant in each district where three or more logs were submitted.

Here are the top winners. Congratulations all around!

YL

First Place C.W.	W5EGD	24,192
Second Place C.W.	W1RLQ	23,870 *
Third Place C.W.	W9WZL	22,501 *

First Place Phone.	W5DRI	64,149 *
Second Place Phone.	KL7BHE	57,885 *
Third Place Phone.	K5BNQ	52,930 *

OM

First Place C.W.	K2DSW	1,755 *
Second Place C.W.	W3ZSX	1,656 *
Third Place C.W.	K6SXA	1,631 *

First Place Phone.	W8AJW	6,131 *
Second Place Phone.	W5LVM	3,800 *
Third Place Phone.	W7SFK	3,744

* Denotes low power multiplier used

YL C.W.

Call	No. of Contests	Sec-onds	Worked Score	Call	No. of Contests	Sec-onds	Worked Score
W1RLQ...	308	62	23,870*	W7PTX...	185	38	8,788*
W2MWY...	307	58	22,258*	W7PUV...	152	32	6,080*
K2ZQG...	259	40	12,950*	W7LXQ...	87	27	2,349
K2JYZ...	146	41	7,483*	W7BDE...	21	16	420*
K2UKQ...	110	28	3,980	K7ADI...	4	2	10*
K2DKL...	32	14	560*	W8OQO...	288	49	17,640*
K2ACG...	16	7	140*	W8UAF...	200	35	8,750*
W3TSC...	293	44	16,115*	W8SNB...	143	32	5,720*
W3JWM...	190	28	3,500*	W8OGY...	112	29	4,090*
K3BLG...	101	23	2,904*	W8KLL...	114	29	4,133*
W3CDQ...	26	15	585*	W9WZL...	383	47	22,501*
W3GEU...	42	10	525*	W9KSE...	188	31	7,285*
W5EGD...	378	64	24,192	W9MYC...	82	25	2,563*
K5LIU...	325	49	20,106*	W9MLE...	36	20	720
W5IKC...	98	27	3,308*	K9IKL...	197	39	9,601*
K6OWQ...	260	49	12,740	K9GIC...	148	36	6,660*
K6QPG...	182	40	9,100*	G2YL...	38	20	950*
K6EAK...	179	50	8,950	KH6BTX...	127	40	5,880
W6PCA...	84	28	2,940*	KL7ALZ...	155	43	8,331*
W6QMO...	80	25	2,500*	VE2AOB...	64	20	1,600*
W6NAZ...	70	20	1,400	VE2ADA...	30	8	110*
K6SYR...	12	5	570*	VE5DZ...	179	33	5,907*
K6HOL...	12	5	75*	VE7ADR...	46	24	1,380
KN6PBG...	14	2	35*				

YL PHONE

W1RLQ...	397	57	28,286*	W6EHA/M	154	32	6,160*
K1IDGZ...	366	61	22,326	K6HOL...	170	16	3,400*
W1YPT/L...	202	40	8,090	K6PWH...	133	19	3,150*
W1ICV...	226	30	6,780	K6ENK...	170	13	2,210
K1ADY...	85	31	3,294*	W6LFF...	25	19	594*
W1ZEN...	37	15	694*	W6WDL...	22	2	55*
W1QXN...	29	13	471*	W7DXM...	529	56	37,030*
W1MDB...	42	8	420*	W7DRU...	330	45	18,562*
K2JYZ...	204	48	12,240*	W7KAL...	200	44	8,800
W2EWO...	172	46	11,912	W7DIF...	200	44	8,800
K2ZQG...	200	28	7,000*	W7LXQ...	65	28	2,275*
W2OWL...	33	13	536*	K7ADI...	57	21	1,496*
W3BIW...	201	37	7,437	W7CSQ...	45	23	1,294*
W3APT...	99	31	3,536*	W8NDS...	384	56	21,504
W3GCT...	56	22	1,232	W8KLL...	266	24	1,584
K3BLG...	32	11	440*	W8TPZ...	51	1	1,174*
W4KYI...	370	70	32,375*	W8WUT...	18	11	248*
K4KKK...	312	47	18,330*	W9MPX...	264	63	20,790*
W4BL...	262	43	14,083*	W9KSE...	200	40	10,000*
K4IFF...	271	38	12,860*	K9CQF...	159	39	7,751*
W4KOL...	192	33	7,920*	K9BRJ...	118	37	4,366
K4CZP...	182	32	5,824	W9VNG...	72	17	1,530*
W4WPD...	136	25	4,250*	W9YWH...	63	20	1,260
W4BLR...	100	35	3,500	W9LDK...	43	16	860*
W5DRI...	703	73	64,149*	W9STR...	52	15	780
K5BNQ...	632	67	52,930*	K9BFS...	429	60	32,175*
W5EGD...	465	49	28,481*	K9EPE...	432	52	22,464
K5LIU...	365	46	20,988*	W9PSP...	300	48	18,000*
W5HTO...	323	33	13,889*	K9GIC...	277	35	12,119*
W5YKE...	190	34	8,075*	K9GRG...	197	43	10,588*
K5CCJ...	100	21	2,100	K9LYV...	200	41	10,250*
K5MSE...	43	17	731*	W9SZH...	222	43	9,546
K5HIF...	20	14	106*	W9BWL...	172	36	7,740*
W6QGX...	656	65	42,640	K9ATT...	105	25	2,025
K6HYC...	659	56	36,904	K9BTV...	43	20	1,075*
K6EXQ...	461	60	36,060	G2YL...	52	30	1,950*
W6JZA...	301	47	17,683*	KH6BGE...	273	52	14,296
W6YZV...	280	41	14,350*	KL7BHE...	681	68	57,885*
K6QGD...	237	38	11,257*	KL7BJD...	256	49	12,544
K6RQE/M...	201	35	8,793*	K2SVR...	435	56	24,360
WINLM...	41	27	1,107*	VE3DDA...	19	7	166*
W1AJZ...	38	22	1,045*	OM C.W.			
W1EQV...	30	16	480	W3OP...	26	18	585*
W1LQM...	13	9	146*	W3HWU...	22	18	495*
W1NJL...	13	9	146*	W3ELW...	25	15	469*
K2DSW...	52	27	1,755*	W3MSR...	25	18	460
K2HXR...	37	22	1,018*	W3FOX...	27	16	432
K2GTC...	34	17	729*	W3QLW...	20	14	350*
W2ATC...	21	13	285*	W3HQH...	20	12	300*
W2CVW...	17	14	238	W3KQD...	17	10	214*
W2NGE...	18	10	225*	W3UUI...	15	10	188*
K2PPV...	14	10	175*	W3GYF...	16	6	53*
W2RIM...	10	10	175*	W3DXA...	10	6	75*
W2JOA...	15	8	150*	W3CN...	5	5	31*
K2VPB...	12	9	135*	W3WHK...	5	5	31*
W2EWZ...	12	8	120*	W4UJ...	47	27	1,586*
W2BJ...	9	72	120*	K4DRO/4...	33	23	949*
W2CUE...	8	6	60*	W4ZQK...	25	16	500*
K2OEG...	8	6	60*	W4EYF...	31	21	459*
K2UTV...	8	6	60*	K4IEK...	20	15	375*
K2PDL...	4	4	20*	W4ZPR...	14	12	210*
K2TBU...	3	3	11*	K4RWX...	13	12	195*
K2UJZ...	2	2	5*	K4EJG...	10	6	75*
W3ZSX...	53	25	1,656*	W5QVZ...	39	20	975*
W3MDO...	42	23	1,208*	W5JD...	34	24	816
W3ARK...	48	23	1,104	W5AWT...	31	21	651
W3VYL...	37	20	825*	K5KWC...	27	19	641*
W3BQA...	31	21	814*	K5DKL...	25	17	531*
				W5VZU...	26	16	520*
				K5EFC...	20	15	360
				W5LGG...	17	12	255*

(Scores continued on page 164)

SPECIAL CITATIONS

Bouquets to W5KRJ, W5SYL, and W2RUF who were recipients of Public Service Commendations issued in conjunction with the 1957 Edison Radio Amateur Award.

Pearl Webb, W5KRJ, of Maplewood, La., was nominated for the award by MARS for her outstanding service during Hurricane Audrey which devastated parts of Louisiana last June. (OM K5BQT, James Harrington of Lake Charles, received the grand Edison award for his efforts in connection with the same storm.)

During 1957 Iva Haley of Grand Prairie, Texas, handled some 2800 QTCs and logged over 2500 hours of operating time. Following the Dallas tornado Iva and her OM, W5MTQ, relayed 1200 emergency messages during a sixty hour period, and following the tornados at Silverton and Tyler Iva served as control station for more emergency net operation.

Clara Reger, W2RUF, of Buffalo, N. Y. received a citation for her tireless efforts in the rehabilitation of a fourteen year-old boy who lost both arms when his antenna fell across a high tension line. Clara lifted the youth from his extreme dependency by helping him prepare for a novice license, by sparking an extensive campaign which showered Lynn with QSLs, and by raising funds for a rig which he could work with his feet (see photo).

We can all be proud of these three YLs who contributed so heavily of their time and themselves to worthy causes without thought of remuneration of any kind. Unwittingly they personify the true ham spirit.

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The following was originally published in the August 1917 issue of *QST*. Recently the extract appeared in the March 1958 issue of *Hawk's Eye View*, a monthly publication of the Hoosier Amateur Women's Klub of Indiana. We think that time has made the piece entertaining enough to re-publish again.

YLs of the Washington Area Young Ladies Amateur Radio Club are checking every aspect of the coming ARRL National Convention to be held in August in scenic Washington, D. C. Ethel Smith, K4LMB, and Joan Thompson, KN3ABT, test conditions on two and ten meters in front of the nation's Capitol on famed Capitol Hill, and in the photo on the right Ethel and Joan and Beulah Barrick, W4DEE, and Camille Hedges, W3TSC, make further checks on operating portable on the steps of the beautiful Supreme Court Building. K4LMB is in charge of the XYL program for the convention, and KN3ABT is organizing a Fashion Show guaranteed to delight all feminine guests. W4DEE and W3TSC are assisting John DeBardleben, W3CN, in his efforts as Chairman of all convention activities for YLs and XYLs. The big weekend is August 15th, 16th, and 17th. Convention headquarters will be the Sheraton Park Hotel. Make your reservations right away for what the committee hopes will be the biggest and best of all ARRL conventions!



W2RUF observes K2DGU's proficiency with his automatic "foot key." (see "Special Citations")

The Ladies Are Coming

When amateur wireless opens up again in these United States of America, things are going to be different. There will be several hundred of the fair sex scattered around among us. This means that we shall have to introduce several changes. We shall have to be careful where we use OM. What will take its place is not apparent. It will not be OW, from what we have heard from various young ladies. They do not take kindly to being referred to semi-affectionately as Old Woman. Some of them will let Old Lady pass.





Have you ever noticed the pride a ham radiates when he or she mentions that his or her wife or husband is a ham, too? The happy connubial smiles seen in the four photos on this page belong to: Upper left: Delores and Bob Vasilow met in 1952 via ham radio as W2EWO of Catskill and W2VDX of Hudson, N. Y. They now reside in Oswego where they are both active in N. Y. state traffic and CD nets (photo courtesy Binghamton Press). Upper right: A well-known XYL-OM team in Sweden are SM5AE and SM5XP. Ann and Tore Gustavsson operate 14, 21, and 28 Mc. phone from Vasteraas (photo via W9BRD). Left: From South Charleston, West Virginia, Gloria and Jim Read operate as K8HAI and K8HEX on 40 c.w. Gloria also DXes on 15 and 20 meters (photo via W8PQQ). Below: Jiro and Kazuko Ando, JA6GH and JA6KH, of Fukuoka, Japan. Mr. and Mrs. Ando enjoy frequent contacts with W6 hams on 7 Mc. (photo via K6DV).

although there are others who object to even this. We would not venture to make a suggestion in such a delicate matter, but just the same, we fully expect to hear DG. This will sound pretty chummy, but in wireless where you cannot see the other person, and where you never expect that you will see them, and where formalities are more of a dead letter than in anything else we know of, it might be that calling an unknown lady, dear girl, might be taken all right.

Language will have to be improved a little bit because, "Keep out, you big Ham," will not be exactly polite when the ladies are around. We never have had much profanity on the air, so this will go as it is, but we fully expect to see a general uplift throughout the fraternity when the ladies join us. Here's to them, and it gives us great pleasure to extend the glad hand of fellowship when the happy day comes, and we will reopen.

PLANS MADE?

For Field Day, of course! The big week end of the year is coming up fast. June 28 and 29 are the dates. Don't forget to send us a report of your activities — pictures, too.

1958 AWTAR

The Twelfth Annual All-Woman Transcontinental Air Race is scheduled for July 4-8 this year. Take-off will be from Montgomery Field, San Diego; contestants will cross the finish line at Charleston, South Carolina Municipal Airport. Chairman of the amateur net, set-up to aid the flyers at the start and terminus points and at each of the stop-over cities en route (Yuma, Tucson, El Paso, Midland, Abilene, Tyler, Jackson, Montgomery, and Macon) is Carolyn Currens, W3GTC, of Norristown, Pa.



I.A.R.U. News



QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. Cards for territories and possessions not listed separately can be mailed to the bureau in the parent country; e.g., cards for French Cameroons (FES) go to REF in France; cards for VP8s go to RSGB in England. W, K, VE and VO stations only may send foreign cards for which no bureau is listed to ARRL.

For service on incoming foreign cards, see list of domestic bureaus in most QSTs under "ARRL QSL Bureau."

Algeria: G. Deville, FA9RW, Box 21, Maison-Carree, Alger
Angola: L.A.R.A., P.O. Box 484, Luanda
Argentina: R.C.A., Carlos Calvo 1424, Buenos Aires
Australia: W.I.A., Box 2611 W, G.P.O., Melbourne
Austria: Oe. V.S.V. P.O. Box 15, Klosterneuburg, 2
Azores: Via Portugal
Bahamas: C. N. Albury, Telecommunications Dept., Nassau
Barbados: Arthur St. C. Farmer, Storms Gift, Brandons, Deacons Road, St. Michael
Belgian Congo: OA5FH, P.O. Box 614, Jadotville
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: R.S.B., P.O. Box 275, Hamilton
Bolivia: R.C.B., Casilla 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: D. E. Yong, VP3YG, Box 325, Georgetown
British Honduras: L. H. Alpuehe, VPIHA, P.O. Box 1, El Cayo
Bulgaria: Box 830, Sofia
Burma: Filt. Lt. Aung Myint, XZ2OM, BAF/1064, % Dept. of V.C.S., D.S. (Afr), Ministry of Defense, Rangoon, Union of Burma, Asia
Canton Island: H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club de Costa Rica, Box 2412, San Jose
Cuba: Radio Club de Cuba, QSL Bureau, Ayestaran 629, Altos Cerro, Habana
Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia: C.A.V., P.O. Box 69, Prague I
Denmark: OZ2NU, Borge Petersen, P.O. Box 335, Aalborg
Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: Calle Duarte #76, C. Trujillo
East Africa: (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony
Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
Elre: I.R.T.S. QSL Bureau, 39 Booterstown Ave., Blackrock, Dublin, Ireland
Ethiopia: Telecommunications Amateur Radio Club, P.O. Box 1047, Addis Ababa
Fiji: S. H. Mayne, VS, R2A Victoria Parade, Suva
Finland: SRAL, Box 306, Helsinki
Formosa: Hq MAAG, APO 63, San Francisco, California
France: R.E.F., BP 26, Versailles (8 & O);
France (F7 calls only):
 A/IC Thomas J. Shytle, F7EZ, Hq., US Eucom Mars Radio, APO 128, % P.M., New York, New York
 Germany (DL2 calls only): Via Great Britain
 Germany (DL4 calls only): DL4 QSL Bureau, % Mars Radio, APO 12, N. Y., N. Y.
 Germany (DL5 calls only): Via France
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Gibraltar: E. D. Wills, ZB21, 9 Naval Hospital Road
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Great Britain (and British Empire): A. Milne, 29 Keehill Gardens, Hayes, Bromley, Kent
Greece: George Zarifa, P.O. Box 564, Athens
Greece (Unlisted SVs only): USASG, APO 206, New York, N. Y.
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Guam: G.R.A.L., Box 145, Agaña, Guam, Marianas Islands
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Guatemala: C.R.A.G., P.O. Box 115, Guatemala City
Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Honduras: O. A. Trochez, P.O. Box 244, Tegucigalpa, D. C.
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
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Iceland: Islenskir Radio Amatörar, Box 1058, Reykjavik
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Korea: Mr. In Kwan Lee, Chief Engineer, Radio Supervisory Bureau, O.P.I.R.O.K. Seoul (HL2AM via ARRL)
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Libya: 5A2TZ, Box 372, Tripoli
Liechtenstein: via Switzerland
Luxembourg: G. Berger, 40 Rue Trevires, Luxembourg
Macao: Via Hong Kong
Madagascar: P.O. Box 587, Tannarive
Madeira Island: P.O. Box 257, Funchal
Malaya: QSL Manager, Box 777, Kuala Lumpur
Malta: R. F. Galea, ZB1E, "Casa Galea", Railway Road, Birkirkara
Mauritius: V. de Robillard, Box 155, Port Louis
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Netherlands Antilles (Curacao): Postbox 383, Willemstad, Curacao
New Guinea: Via Papua
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Papua: VK9 QSL Officer, P.O. Box 204, Port Moresby
Peru: R.C.P., Box 538, Lima
Philippine Islands: Elpidio G. DeCastro, Philippine Amn. for Radio Advancement, 2046 Taft Ave., Pasay City
Poland: PZK QSL Bureau, P. O. Box 320, Warsaw 10
Portugal: Rua de D. Pedro V., 7-4, Lisbon
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 (Continued on page 164)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

Most amateurs recognize that the purpose of radio call signs includes (1) installation and/or operator identification, (2) national designation, and (3) geographical indication. In h.f. DX work all three of these angles can be crucially important. We know this. But several overseas licensing authorities apparently do not, for in certain areas of the globe call signs are issued and reissued in patterns of supreme ambiguity.

Regarding (3) we refer such unmindful powers-that-be to the Mauritius plan (last month's "Where" text) for an exemplary stride in the right direction. And reference (1) we reiterate our periodic appeal: Retire suffixes for at least one year, preferably longer, before reassigning them. We see no reason, for example, why newcomer Joe Doaks must inherit and fight off Slippery Smith's atrocious QSL reputation and operating notoriety; or why valuable QSLs for Doaks must wind up at the forwarding address of Smith.

Further specific pleas should be obviated by one simple question which we put to licensing authorities throughout the world: Beyond mere official bookkeeping, do the amateur call signs you issue clearly fulfill their purpose?

Last month's "YL News and Views" presented interesting data concerning Les Girls *vis-à-vis* DX. We note that the 64 DXCC memberships won by 58 YLs includes nary a qualifier from Asia; also that W7QGF and W9CXC are solos in their call areas, with VE3DKY the lone Canadian Clubber.

The salient statistic, however, seems to be the actual quantity of ladies listed. Even the most conservative reference to total-YL-hams estimates appears to put this feminine DXCC representation far below par. *Viz.*, the ratio of OMs to YLs in amateur radio certainly is not as great as 4500 (roughly the number of masculine DXCC diplomas extant) to 64!

Which inevitably leads us to the disconcerting conclusion that our slick chicks are generally cool to the DX facet. 'Smatter, gals? What's with this nix-DX? Perhaps it's unmanly to burn the midnight oil or rise with the chickens to work Asia on 20. Or is it unladylike to clobber competition in the pile-ups? (No, it can't be *that*; we've seen you kids in action at fire sales.)

Field Day comes but once each year,
A dandy chance to soak your gear!
— Al Fresco

Corny couplets to the contrary, may the sun shine bright on your own FD site this month

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during hamdom's one annual all-encompassing operating activity which calls together DX men, traffic hounds, v.h.f. specialists, rag-chew artists, and what have you. *Carpe diem* — to the field!

It occurs to us that the "How's" readership might be interested in random DX-worked data filed by portables in this year's event. If convenient, rifle through your outfit's archives and let Jeeves & Co. know how you make out in the line of continents and countries worked. Of course we know it's a sheer impossibility for FD congregations to QSO anything like, say, 100 different countries within the brief allotted operating time. Well — it is, isn't it?

What:

Anchors aweigh! Field Day time is DXpedition season, too, and our bands are rife with rumors of roving. Scuttlebut samples would have IADW imminently off to San Marino; F8FC, ON4AU and others to Andorra as PX1FC; F7DL and cronies to the same place; PY1CK to Trindade Isle; W6ITH to VP9RT, F87RT, PJ2MC and undisclosed destinations; TI2s HP RC and VE3MR to San Andre; VE3MR thence to St. Pierre; VQ3SS to Zanzibar; VQ4s AQ and KRL to Seychelles; VP2VB/MM to Aves Island, etc.; VS1HX & Co. to the Maldives; VU2RM, *et al.*, to Nepal; ZS6IF to ZS7/8/9; HA5AM to his HA5AM/ZA hangout; KP4IO to Navassa; SM8BYG to Trucial Oman; the usual W/K/VE vagabonds to the Caribbean circuit; and John Foster Dulles, VLP, to Lord Howe Island or the Aldabras. When? What bands and emissions? Where to QSL? Keep an ear on WIAW and consult your favorite crystal ball regularly. Meanwhile, to facts:

20 c.w., summer resort of long DX tradition, is the subject of mail from W1s BIL TYQ, W2s ATC HBV HMJ, W3s LAX LOS (51/25 worked/confirmed), W4s CYY KFC UWA/2, W5s CAN MY, W6s KG RLP (195/171), ZZ, W7s CSW DJU GYR VCB YAO, W8s IBX (109/85), KPL, W9s ERU (213/165), JUV/9 UBI YYG; KIACC, K2s BJA RQC (52/31), UFP, K4s HIG HPR IEX JOS MOP MWB (36), PHY RJM, K5s AUZ ESW, K6s CQF CTV QHC SHJ SXA (113/57), TXA (130/90), VTC,





TF2WCC (W1ZMO) offers his Keflavik diggings as our QTH of the Month, views typical of the scenery surrounding most of the TF2 gang. Bob transmits on several DX bands but derives much of his hamming fun from monitoring activities on 160 meters where he consistently logs and tapes signals from three continents. (Photos via W1BB)

K9ELT; DL4BL, HR1JH, KR6BW and VE1PQ (211/196). They suggest you keep an ear open for AC3PN, BV1US, CN2s AQ BK (14,000 kc.) at 2 GMT, CRs 4AH 4AR 6AI 3, 6BX (15) 10, 8AC 9AH, CTs 2AI (40) 10, 2BO (25) 10, 3AB, DM2ALN, DUe 7SV 6JO, EA6s AW AZ (90) 7, F9QV/FC, FB8s BS CE, FB8s BZ CF 3, FK8AS (21), FL8AC (37) 5, FO8s AC 5, AG, FO8AJ, FUBAA, FY7s YE YF, GD3UB (20) 17, HA8 2MF 2TY (5A2TY7), 4YB 5BW 5DH 5KBP 8WS, HB4FE of Switzerland's military, HC1HL, HE9LAC, HH2s KVVU Y, HKs 3MM 8AI of San Andres, HL0s KT KY, HP9FC/mm, HR2FG, HS1C 18, ISFP 3, IT1AI, JT1AA, JZ0HA (40) 13, K0TSQ/KC6 (39), KA2s 2KS (100), 9AF, KC4s USB USF USK, KC6JC (10) 9, KG1IB (70) 6, KG6s AAY FAE, KM6BJ (10) 6, KP6AK, KR6s BLEB GW SF 13, KV4s AA (80) 10, BO, KX6s AB BP 11, BQ, LU3Q (70) 4, LX1MG, LZ1KBA (90) 5, OH2YV/OH8, OQ5IG (40) 1, OX3UD, OY2H, PJ6 2AQ 2ME (70) 3, 3AB 5CB, PZIAP (15) 1, SM1BSA (25) of Swedish award (WGS) desirability, ST2s AC AR (80) 23, SV9WP 7, TF2WCT, TG6MR (30) 4, TI2s LA PZ WD WR (10) 12, UA1KAE of Russia's Pt. Mirny, Antarctica, base, UA9s DR KCK (1) 3, KOH (80) 15, OI UN, UA0s CD (40) 6, DM FF LJ KCO KDA KJA KKB KKD OM, UB5s galore, UC2s AF CB (10) 9, UD6KAB, UH8KAA, UBAT/UJ8, UIRKBF, UJ8KAA, UNIKAB (10) 17, UO5AA 7, UP2KCB (30) 7, UQ2s AB 6, AK 9, BA KAA (60) 6, KAB, UR2AK 9, VE3BQL/SU, VK9s AD (26) 6 of Norfolk Is., 9BB 9JF 9XK 9XM, VK6s AB RO (10), VP6 5BL 3, 6PJ 6RG 7NG 7NM 8CW, VQ2s 2EW 3CF (30) 13, 6AB 6LQ 4, 8ASR, VR3s ACR, VS1s DU FZ GK GL GX (20) 15, HQ HU HZ, VS2s 2DW (40) 22, 4BA (86) 13, 6DV (15) 12, 6EC (18) 16, VU2s AJ CK 2, GE SX, W3PZW/KB6, WAWSP/KG6, XW8AI, XZ2TH, YJ1DL 11, YO2s 2CD 2KAB (60) 1, 3XU (81) 5, YV6s 1AD 4AU 5BJ (40) 5, 5HL, ZA1s ADG (50) 0, KAS (19) 2-3, KM, ZB6, 1DC 2Z, ZC2s 8AC (90), 4PT (32), 5AL (60) 9, ZD2s 2CKH 3G (84) 0-2, ZE6s 5JU 6JX (52) 1, ZK6s 1AA 1AK (10) 10, 2AD 18, ZM6s AS (10) 9, TT, ZP5s AW 4, AY, ZS6 3B (100) 18, 3DP, 8R 8V, 4S7WB, 4X4KK, 5As 1FA 1, 2TY 5, 4TC (10) 3, 9G1s CM 21, CN (80) 22 and 9K2AN (52) 22-23.

20 phone keeps WIPNR, W4RQR*, W6s OBH RLP ZZ, W8YIN*, KICBR, K6s SHJ TXA; DL4BL, HK7LX, HR1JH* and VE1PQ busy with BV1US (160) 12-15, CE7AY, CN2DD*, CO6LF*, CT3AN (140), DU1MG (190) 15, ET2US*, FF8AP (160), HL9KT (150) 7, KA2s 2JA (150) 15, 2ZZ (160), 01J (190) 15 of Iwo Jima, KC4USB*, KC6CG (230) 14-15, KG1FR*(258)3, KV4AA* (280) 2, KW6CO (250) 6-7, ODSB2* (303) 2, OH0NC* (322) 5, OY2Z, UA1DZ (140), VE3BQL/SU, VK6s 9MK 9YT (143) 13 of T.N.G., 0TC of Macquarie, VP6s 4TE* 5AB* 5RS* 6LT*, VR3s P (170) 8-9, R (110) 11, VS2s 2DQ (140) 14-15, 2DW (130) 15, 6AE 13, 6DJ (110) 15, 9AJ, XZ2TH, ZS6KO/ZST* and 9G1BQ, asterisks tagging a.s.b. users.

15 c.w. makes a strong showing so late in the season, supplying WZJQJ, W3s CMN LXH, W4s IY KFC UWA-7, W6s CG KG ZZ, W7s DJU GYR IXH (55/17), YAO, W8s IBX JSU, W9s UBI ZTK; K1s ACC CBR, K2s PIM PPT PPV (43), SFA UFP UYG, ZDZ, K4s HIG HPR IEX LAY MOC PHY (53), K5ESW, K6s CTV QHC SXA VAW VTF ZDL, K9s ELT G8G ISP JIN, K0GRS; DL4BL and KR6BW with the likes of one AC4BF, BV1US, CN2s AQ KY 22, BK (100), CN8GU, CRs 4AD (40), 6AI 22, 7LU 19, 9AH 15, CT3AB (100) 21-22, DM2s ADE ALN, DU7SV, EASBJ (31) 18, ELIK, F9QV/FC, FA9JO, FE8A23, FF8s AJ 17, BF 23, FK8AL, FO8AP 22, GC8DO (60) 18, HB6s 1MO/lu 4FE, HC1LE, HH1s 2KVU 3JC (80) 22, HB8B 16, HK4OM (110) 3, JAs 1B8O (70) 4, IVX, 2YT (20) 5, 3AF 4BB 6PA 7AD

22, JT1s AA 15, YL 15, K4AQL/KG6 (30) 6, K5DFS/KG6, KA2s MP (60) 5, RB (140) 4, KC4USB 5, KG1s CK IB 21, KG4s AI 23, AS 1, KG6s AAY FAE, KP6s AK AL, KV4AA, LX2GH 14-15, OA4s AGI BF, OD5BZ 20, OQ5s BT 1, GU 1, OX3DL, PJ2s AN AO 22, ME (80) 2 of Sint Maarten, PZ1AO 22, ST2AR 20-21, SV0WP 20, TF6s 2WCG (48), 22WCT 21, 3KG, UA6s 1BI (40) 15, 1DA 9CM 9KCE 13, 9OI, UB5s FG KMB, UD6KAB 13, UL7HB 17-18, UO5AA (19), UO2KAA 15-16, UR2KAA 17-18, VK9XK, VP6s 7NG 22, 8CR 21-22, 9CR, VQ6s 4FK 0, 6LQ (60) 2, one 88P, VS6EC 13, VU2IR 16, XEs 1RM 1YF 2FA, YN1AA (40) 12, YO6 3RF 5LC (50) 18, YV5BJ, WH6CIZ 3, WP4s AKG ALQ, W3PZW/KB6 (90), W5RYG /KG6 19, ZB1s DZ (57) 22, SS (40), VV, ZC6s 4IP 15-16, 5AL (35), ZD3G (36) 23-0, ZE1JV 22-0, ZP9AY 23, ZS3AG (72), 4X4s DK and JU 19.

15 phone fanciers find fewer prolific breakthroughs on the average now, but WIPNR (134/130), W3CMN, W6ZZ, W7s LXH YAO, W9WHM; K1s ACC CBR, K2s UTC (101), ZDZ, K4s LAY PHY, K6s CQF CTV, K9GSG, K0GRS; HR1JH, KR6BW and British Guiana monitor C. V. Edwards recommend CE3AGI of IGY bent, CE9AE, CN8EX, CR6CS, ELA 3, FO8AG, GD3UB, HG1LW, HL9KT 3, HP3FL, KA2s AL (240) 6, RB ZZ, KC6CG (340) 5, KGe 1EE 4AL, KX6s BP BU, LX1DC, OA4AK, OD5AV, Belgian Antarctic entry ORAVN, SVs 1AA (170) 5, 9FR, TF2WCI, TG6s 7 CB 2, 7SS 9TS, TI6s 5JAP 8WTC, VE3BQL/SU of Gaza Strip, VK9JF (180) 12-13, VP6s 3AD 5AB 5AK 5BL 6LT 8CJ, VQ2AS, XE1H, YN1s ARM FF TF, YS1M8, YV5GY, ZD3F, ZE2JE, ZK1BS, ZS6s 3AG and 8I.

15 Novice news thins seasonally but the game still is afoot. KN2s HIY ZDZ, KN4RJN, KN5JZ, KN7APZ and KN9ISP await impressive shack display material from CT1US, DU7SV, EL4J, FASRJ, HBSE, JAJJU, KG6s 1EE 4AS, KL7CDF, KZ5s DNN RHN, LU6s 1AAH 1DEN 7FAL, OQ5GU, PY7AFK, PS5AR, TF6s 2WCT 5TP, VK6s 2HZ 2QL 3DQ 3KF 4XK, VP6NX, WH6s CIZ CJP COV CRN, WP4s AKG AKU, XE2FA, ZB1DC, ZLs 1MT 1TB 2GH 2IQ, ZS6s FF JK and 4X4JU. . . . Forty finds Novice range news from KN4PVU (now K4PVU) who nailed PY7AGC; KN4QLN who worked WH6COG (701 kc.); and KN7AYP who, with buddy KN7CEO, three-wayed with DL4ET. KN4PVU also scored on 3.7 Me. with WP4LD.

10 c.w. cativates peacefully, dreaming of the triumphant season just closed. But before the calm closes in W2HMJ, W3s CMN ZKH, W4KFC, W5KLB, W6s KG ZZ, W7VCR, W8s IBX KX, W9s FNXX PQY YG; K1ACC, K2TEZ, K3AMH/4, K4EJG, K5ESW, K6s CTV SXA and K9ELT cashed in on BV1US, CE6s 3AG 4AD, CN8s GU JX, CR6DA 22, CT3AB, DU7SV, EASBF, FF8s AD (80) 20, AL, GD3UB, GC8DO 17, HA8WS, HB1L/ar, HC1HL, HH2s K KVU, HB8B, JA6s IAC 1BI 1VX 3AB 3AF 3AK 3WS 7AF 0FZ, K0TSQ/KG6, KG6s AAY FAE, KP6AK, KR6s BF SF, KX6AF, LZ1KEP, OA4s AGI FA, OD5BZ, OQ5GU 21, PJ2ME, SP8CK, VK9XK, VP6s 6GT 7NG 9CR, VQ6s 2RD 22, 2RG 4FK, VS9AC, VU2MD (48), XEs 1YF 2FA, ZB2s 1CR 21, ZC5AL, ZD7SA (60) 19-20, ZP9AY 22 and ZS3AG. . . . Eleven saw W4s KFC UWA-7, W8IBX, KZUFF and K6SXA capture CE3AG, HH2KVU, HK1FT, KC4USB, KGBFAE, KP6AK, KX6AF, VK2GW, VP7NG, XE1YP and ZL1MQ code-fashion.

10 phone closes out the late spring rush in fine style, BV1US (390), CE3AGI, CN2WX, CN8s HU (178), HW 1J (50) 14-15, DU6IV, EA6BS (250), EL8D, FS7RT (490) under W6ITH auspices, FYY7E, GD3YS, HC1s AGI HL MD, HH2Z, HKs 3FV 7LX, HL9KT, HR2MT,

JA6 1EC 1EW 4AH, KA2a EB EN JO BK (400), ZZ, KA6 8RA 9LJ (490) of the Bonin, KCa 4USW (640), 6CG, K6GAGY, KM6BK, KR6a GC LC QW 88, KV4BL, KK6a AF BP CA CC CG, OD5BZ, OY1R, PJ2AL, SV8a WS WU, TF2WCV, TG9RQ, UA6 9MI 0LA (225), UN1AB, VE3BQL/SU, VK9LE, VP6 1GLG 2GX 4LO 5BP 6TR 8CV, VQ6 2AS 4FK, VR6 2BC 3A (320), VS6 2DQ (475), 6DJ 9AP, VU2CQ, YS1MS, ZG4IP, ZD6 3E 3F 6JL 7SA, ZK6 1BS (440), ZAB (338), jolly ZM1BL (440), ZP9AU, ZS6 5NZ/257 (450), 7C 8L, groovy 2J4AA, 4X4CB, 5A4TT, 9G1a AA and CH (440) were cultivated by WIEKU, W3ZKH (149 on 28 Mc.), W5a ERY KLB MZP, W6a BB (QAC opping), ZF, W7a PNN VCB YAQ, W8IBX; KIACC, K2a SBT SFA TEZ VAB, K3AMH/4, K5ESW, K6SXA and HK7LX.

40 c.w., atmospherics and all; receives the approbation of W2JBL, W3GYF, W4a KFC UWA/2, W6KG, W7a DUU SUI YAG, W8IBX; KIACC, K2a UPP VQM, K4RJM, K6a CTV QHC 8XA, K6GRS and K6GQW, doubtless because of CN6a BP GU, DU7SV, EA8BF, HK3KG, HL2AN (26) 14, JA1a AEA BI BKS BVS PS VX, JA2JW, JA3a AB AF BB TT ZY, JA6 5AB 6FB 9BE, KA2RB, KC4USB (8), K6GFAE, KR6a BF QW (22), KV4AA, KX6AF, OA4FT, UA9KFC, UB5KGA, VK9XK 10, VP6 2GL (70) 10, 28I (14), 6RG 7NG 9CR, ZS2DF (30) 16, XE6 1A 1YF 2FA, YQ3RF, ZC6a 4IP 5AL 11-12, ZM6BB/mm (3) 15, ZS6C and 9G1BF.

80 c.w.'s static barrage begins to separate the adult males from the juveniles. W1DBA, W4a KFC UWA/2, W8YFJ; K4ELG, K6a QHC and 8XA set their noise-peak limiters and dragged through CN8GQ, EA4GA, HH2KVU, JA6 1VX 8AH, KH6IJ, KJ2SWU, PJ2AN, VK2GW, VP6 6RG 7NG 9CR, XE2a FA HH, British, French, German, Swiss, Czech and Dutch customers.

160 c.w. matters are at the post-mortem stage except for the most dedicated schedule-keepers. Doings on 1.8 Mc. in March and April featured KH6IJ QSOs with W4KFC, K6SXA and other mainlanders; a nice long-haul job between W2EMY and VP7NG; and contacts by HH2KVU with W4KFC and other DX Test multiplier hunters. . . . W1BB pulls the switch on his famous 160-Meter DX Test Bulletin series for the summer, periodicals to which "How's" is much indebted for coverage of 1.8-Mc. transcriptions over the past few months. A rough season, but well done!

Where:

South America — If you've been behind the door during 1958 Fernando de Noronha activity you would be wise to check your PY7 QSL file dating from 1945. PY1CK lists previous Fernando radiations by such PY7a as ADW DQ and EX. By the way, the regular prefix for the place continues as PY7 until PY9, also sought for Trinidad, is officially adopted. . . . GS8s brief us on Falklands and Dependencies developments: "VP8a BM BR BS BT BY CE and CJ are due for QRT. VP8a DA, So, Orkneys, and CZ, So. Georgia, will be available. VP8a CG CT and DB are active from So. Shetlands, while VP8a CF CN CO DG

A scant 445 miles from the North Pole, this snug shack housed VEBAT on Ellesmere Island at 82°39'N-62°41'W until a few weeks ago. Earle now is back in comparatively balmy Whitehorse, relinquishing title as Canada's Most Northerly Ham Station to VEBs ML and NS, both about 449 miles from the Pole. While on Ellesmere VEBAT tried his DX hand on 80 through 10 meters, also snooping a bit on 160 and 6, but traffic responsibilities command most of the operating time available to amateurs in the Far North.



DH DI and DK are on the air in Grahamland. VP8s generally are clear of scheduled work after 1900 GMT and find that Europeans usually can be QSDed between 1900 and 2100 GMT on 14 and/or 21 Mc."

Africa — W4YIC holds the logs for VQ4EO's spring a.s.b. safaris as VQ3EO, VQ5EO, VQ4EO/QQ5, VQ4EO/Q8, VQ4EO/F8, VQ4EO/ZD2, VQ4EO/ZD1, FD8DZ and F8DZ. While Paul rests up in England W4YIC responds to QSL inquiries bearing a.s.b. and full QSO details. . . . SCDXC finds W1FH distributing cards incoming from VQ8AS/VQ8ASR. If you anticipate one of Ron's Rodriguez convincers, ply Chas. with a.s.b. . . . VQ2RG, ready to file for DXCC with 110 confirmed, tells W8KX, "I'm returning your IRCs — I QSL 100 per cent but never use 'em'. . . . W2HBV is apprised of pirate 14-Mc. c.w. activity involving CR6BU's call. . . . Ex-FE8AE comes through with a QSL for W1TS from France (holiday QTH in Jan. '58 QST) and advises Don, "I intend to leave for New Caledonia in late June or early July. . . . Regarding his projected DX work from Tanganyika, Kenya, Uganda and Nyasaland this summer ZEZJO assures, "I will QSL 100 per cent upon my return to Salisbury." Many will remember Mal as VQ1JO. . . . Handling Yank QSL matters for ZD3E, W8EWB informs: "I have his log dating from December 14, 1957, and will be receiving weekly transcripts from now on." Accord Clyde the customary self-addressed-stamped-envelope courtesy. . . . WGDNC hears that ZD9AF's outbound mail shipments are fairly frequent but Dave's incoming deliveries average only four per year.

Asia — OK1JX files the JT1AA log solid from January 25th to March 1, 1958, and requests via WGDNC that all correspondents include full contact data. . . . W1DXC relays a suggestion from ex-Y13AA that QSLs for Iraq HNs, at least for the present, be shipped only via RSGB. . . . UC2AF hints that he may be able to assist in the acquisition of UM8KAA confirmations.

Oceania — W9NTJ/KG6 closed down in May in favor of a West Coast location. "At present I'm not sure I'll be able to operate from the new duty station but if I do I'll surely watch for all the gang from there. Anyone who missed out on a deserved W9NTJ/KG6 QSL can reach me through my Indiana address." . . . KC6UZ mentions that W/Ks are not permitted to operate fixed-portable /KG6 or /KX6. "The Trust Territory is not a territory or possession of the United States and has no agreement for reciprocal amateur operation. For ham purposes the T.T. is a foreign country where permission to establish and/or operate a station must be obtained from the Territory government."

"So far I've QSLd 100 per cent," writes KR6BW (W6PWQ). "But returns from Stateside stations have been poor, mighty poor." Let's get with it, now. . . . VK2EG is said to be fulfilling VK1GA QSL obligations and is also hard at work assisting the current VK9 gang in similar matters. . . . VK6EJ, who farms 3000 antipodes acres, observes: "I formerly QSLd all new contacts 100 per cent but, not having an office staff and desiring to spend more time on the air, I now QSL only on receipt of cards or when specifically asked to do so." Fair enough.

Europe — "Anyone still needing my Crete QSL can reach me at my new Los Angeles address," ex-SV8WQ writes W1IKE. Same follows. . . . W8JSU (ex-W2RDK) is told by F9QV/FC that some 500 Corsica QSLs now are en route kitchie brethren with more to follow. Raoul recently came by 6000 blank pasteboards, ready the latter of which held things up. W8JSU adds, "Over the years I've found, no matter how poor one's command of the other fellow's lingo, he gets a big boot out of your flinging it at him. Does wonders for the QSL percentage. No Swahili here, though, so I still need a card from Z87." . . . Moving back across the Channel, DL2YU writes, "Although all contacts have been QSLd I'll be delighted to send another card direct to anyone who forwards QSO details via RSGB." . . . GM3KHH, a 160-meter specialist, reports receipt of QSLs accruing from 21- and 28-Mc. activity by a call-tiff. "One more batch and I can just about claim WAS!" Bill does verify all genuine GM3KHH contacts.

Hereabouts — "Have QSLd all stations I worked while operating KG1BB," avers KG1CK/K2YCT. "If by chance I goofed, anyone who finds they have not received a due card can reapply to KG1CK." Bud keeps the latter call warm around 21,120 kc. . . . Donors of the following individual items include W1s APU AZW BIL EKU IKE JYH TS UED WFO, W2s ATC CTO HMJ SHZ SQT, W3s EQK LEZ PA, W4s KFC NIX ZQ, W6a CG KG RLP W7a CSW SUL, W8s DMY ERU JUV LNQ, W9s BSK QGI; K2a BJA PIM SFA TEZ VAB VQM, K4a ELG MAOF RJM, K5a AUZ ESW, K6a COF SFA TZA ZDL, K9ELT; DL4YK, F7CO, KC6UZ, VE1PQ, DL8Rider (La.) DX Club, Hamsters (Chicago) Radio Club, Japan DX Radio Club, Newark News Radio Club, Northern California DX Club, Southern California DX Club, West Gulf DX Club and Willamette Valley DX Club. Help yourself:

BV1TC, House No. 8, Lane 22, Kirilin Rd., Taipei, Formosa
C1A, Radio Peiping, Peiping, China
CE2JJ, Box 4184, Valparaiso, Chile
CO3IGY, c/o U. S. Embassy, Havana, Cuba
CR4AH, Nuno, Sal Airport, Cape Verde Islands



CT2AI, Box 29, Ponta Delgada, Azores
DL2s AD ZX, Hq. ZTAF, Moench-Gladbach, Germany,
BFPO 40
ex-DL2YU (via RSGB)
ex-DL4WK, Maj. M. S. Arbogast, SFAAT Army Section,
USA ELM, MAAG, Taiwan, APO 63, San Francisco,
Calif.
DL4YK, SFC E. F. Diehl, Jr., Det. 2, U. S. Army Logistical
Command, APO 19, New York, N. Y.
EL8D, USOM, State Dept. Mail Rm., Washington 25,
D. C.
FD8DZ (via W4IYC)
FF8AJ (via W2AYJ)
HA1KSA, Box 185, Budapest 4, Hungary
HA5AM/ZA, Box 185, Budapest 4, Hungary
HH2DD (via W2LEJ)
HK7LX, E. Quinones, P. O. Box 70, Bucaramanga, Colom-
bia
HL2AM, Box 35, Hq. 314th Air Divn., APO 970, San
Francisco, Calif.
HL2AW (via HL2AJ)
HR1BL, Capt. Lady, c/o SAHSA Airlines, Tegucigalpa,
Honduras
HIDFA, US DOCO South, Navy 510, FPO, New York,
N. Y.
HIDFB, CO, USA Support Command, APO 19, New York,
N. Y.
HIDFC, CG, USA SETAF, APO 168, New York, N. Y.
HIDFD, CO, USA Missile Command, APO 241, New York,
N. Y.
HIDFE, Cmdr., 7227 Support Gp., APO 251, New York,
N. Y.
ex-J8AAA-HL1AA-DL4LU, Lt. Col. G. M. Blencoe, Hq.
USA SETAF, OSO, APO 168, New York, N. Y.
K2ZSB/KP4, V. Lopes, CAA, IATCS, International Air-
port, San Juan, P.R.
KC6AM, A. Travis, Koror, Palau, W. Carolines
KC6AN, A. K. Leong, U. S. Weather Bureau, Truk, E.
Carolines
KM6BJ, T. R. Woods, Box 18, Navy 3080, FPO, San Fran-
cisco, Calif.
KX6BP, T/Sgt E. M. Roz, 1253rd AACs Sqdn., APO 187,
San Francisco, Calif.
KX6BY, Enyu Island Radio Club, Task Gp. 7.3, APO 187,
San Francisco, Calif.
KX6CA, M. E. Meredith, Jr., USCG Loran Stn., EBEYE,
Navy 824, FPO, San Francisco, Calif.
KX6CB, D. B. Witter, Project Betty, Navy 824, FPO, San
Francisco, Calif.
KX6CD, E. L. Parsons, EG & G, Proving Gnds., APO 187,
San Francisco, Calif.
OQ5IG, Box 94, Jadotville, Belgian Congo
PY1CK, F. Serrano, Caixa Postal 5292, Rio de Janeiro,
Brazil
PY8NA (to PY1CK)
PZ1AQ, L. Hanning, P. O. Box 494, Paramaribo, Surinam
PZ1AR, P. O. Box 12, Paramaribo, Surinam
ex-ST2DB (to 9G1AA)
ex-SV6WO, S. Fason, 4811 W. Slauson Ave., Apt. 27, Los
Angeles 56, Calif.
TG7SS, Mission, Santa Elena, Peten, Guatemala
T12RLA, P. O. Box 4405, San Jose, C. R.
T12WD, P. O. Box 2412, San Jose, C. R.
UC2AF, Box 71, Minsk, U.S.S.R.
VE8NC, H. MCS Nonsuch via Edmonton, Alta., Canada
VK9JF, Cocos-Keeling Gp. (via W6GPB)
VK9MK, P. O. Lorengan, Manus, T. N. G.
VK9RO (via W1A)
VP2GL, Box 44, St. George's, Grenada, B. W. I.
VP9CR, Capt. K. N. Harding, 1604th ABW (HEDRON),
APO 856, New York, N. Y.
VQ3-4-SJO (to ZE3JO)

PY1CK/J, studying DX in this Fernando de Noronha schoolroom, passed his course summa cum laude by collecting some 800 QSOs with amateurs in 85 countries during a ten-day January stay. Kibitzer PY7SC, one of several amateurs permanently stationed on the island, appears here with Flavio's DX-100, Phillips receiver plus converter, and allied apparatus. PY1CK and other Brazilian DXpeditioners now work at activating Trindade Island, an even more remote volcanic speck on the Atlantic missile-testing range. (Photo via W1WPO and W0YFE/W0YJU)

VR30 (to G3EMY or via RSGB)
VR3P, TPFO PA170, Christmas, Line Islands via Hono-
lulu, Hawaii, T. H.
VR3Q (to G3DYD)
VR3R, BPFO 170, Fanning, Line Islands
VS1BB/VS9 (to VS1BB)
VS5JL, BPM Ltd., Seria, Brunei
W3PZW/KB6, R. Young, CAA, Canton, Phoenix Gp. (or
to W3PZW)
W8OWY/KS6, General Delivery, Wake Island
XE2PW/AM (via XE2JK)
XE9CDJ (to W7CDD)
XWBAI, Agastin, ECMT/FAL, Vientiane, Laos (or via
REF)
YA1AA, c/o ISWL, 86 Barrenger Rd., London N. 10,
England
ZA1ADG, Box 19, Tirana, Albania
ZA1KB, Box 42, Tirana, Albania
ZB1SS, Royal Marines, Married Qtrs., St. Patrick's Bks.,
Malta
ZD3E (W/Ks via W8EWB)
ZL1NG, T. H. Phillips, 7 Bannerman Rd., Grey Lynn,
Auckland W. 2, N. Z.
ZS6JT/ZS8 (to ZS6JT)
4S7WB, W. Perera, 142 Lewis Pl. Negombo, Ceylon
5A4TJ, Box 638, Tripoli, Libya
5A5TK (via CN8FD)
9K2AQ (via RSGB)

Whence:

Europe — Those new IIs with Yankee draws are stirring a storm on DX bands this summer. Thanks to successful negotiations with the Italian government our Southern European Task Force has licensed several installations in that country. W2s NVR ZSO, K2MZT, W4HYU, W6FZE, K6s EWQ GBY KGP, W7AUI, K7BFI, W9ESM, K9BDV and K17QQ are among Italy-based beneficiaries. A maximum input of 300 watts is permitted on 3613-3627, 3647-3667, 7000-7150, 14,000-14,350, 21,000-21,450, 28,000-29,700 and 144,000-156,000 kc. WIUED understands that FCC General and Advanced tickets can qualify military, army-employed civies and tech-rep personnel for II operation. . . . U.S.S.R. chatter via UC2AA, UB5DW and W5CAN: There now are some 3800 Russian amateurs on short-wave bands and an additional 3500 using v.h.f. Some calls signed by YLs are UA5 1BM 1KAI 3CU 3IT, 3KAM 3KKB 6KAC 9IDA 9KAD 9KSB, UB5KKA, UF6AM, UT8s AP KAA KBA and UQ2AG. . . . Certifications are popping up here and there, such as Central Radio Club's P150C (similar to DXCC), Worked-100-Sverdlovsk, Worked-40-Continents and Worked-10-Minsk. . . . A typical "U" radio bug's progress includes (1) passing a code test for an a.w.l. license, (2) appointment to staff membership at a club-collective station, and (3) qualifying for a personal (private) call sign and station through passing further examinations and securing necessary sponsorship. . . . Radiotelephone privileges are granted only to the most experienced and proficient 1st Class U.S.S.R. licensees. . . . UA3KAA of Moscow's Central Radio Club performs bulletin-transmission services for Russian hamdom and is audible hereabouts on 14,100 kc. at 0500 GMT. . . . WGDXC understands that SV6WN/Crete will remain active there at least till mid-'59. . . . DL4s TO and ZO intend DL4TO/LX DXpeditionary doings around this time. . . . DM2ABB directs attention to WADIM, an East German certification of world-wide availability based on the accumulation of DM band-district QSO points for contacts dating after July 14, 1953. Minimum requirement calls for 20 points and 10 different districts, the latter indicated by the final letter in each DM's suffix (A for Rostock, B for Schwerin, etc.). Write award chief DM2ABB for the full story.

Asia — G3JFT (ex-Y13AA) writes WVDXC from Habbaniya that a parley with service licensing authorities was successfully concluded in early 1958. Brian and another G applied for permits and hope to be signing HN3AA and HN3DS, respectively, the former expecting to run 15 watts to a 5763 on most DX bands. . . . W2CTO relays the

current 9K2AN operational routine: 14,050, 14,070 or 14,098 kc. from 2130 to midnight GMT; 14,070 at 0400-0500; and 14,098 again around 1430-1600. The program is subject to modification by Kuwait's torrid temperatures

..... Joining Israel's 10th anniversary observations, IARC is sponsoring a DX marathon to run from April through October of this year. According to *Israel Digest*, 4Xia will try to contact the greatest possible number of amateurs abroad, and vice versa. "There will be one winner from each continent, three winners from each country and ten winners from Israel." K6VAW angles for a berth with the Burbank Youth Symphony due for a Korean tour this season and, if fate smiles, will pack a compact s.e.b. outfit Roughly epitomizing a survey by Japan's *Radio Experimenter* forwarded by K6DY and JA1CV, we see that about 80 per cent of JA ham receivers are homepun. An antenna poll favors the long-wire, standard doublet, yagi beam, sepp, vertical and folded dipole in that order. Final tube types find the 807-1625 unchallenged in popularity, a 10-to-1 favorite over runers-up 832A and 2E26 bottles W6RLP discovered ex-VS1GY pounding brass as ZLIAOV and learns that ex-VS1HJ now signs G3MDI back home in Manchester Via ISWLV, Kandahar's YA1AA, intermittently active since last September, now has two operators to keep its KWS-1 and 75A-4 warm between 1500 and 1800 GMT although Afghanistan power sources continue notably unreliable DL1AB visited Turkey this spring on official business and found hamming possibilities nil.

Africa—Visiting Z88K's antenna farm, Z86AJ/Z88 kicked off the DXpedition season down Basoutoland way by collecting 116 contacts in March, many with W/Ks. W8YIN, No. 1 contact for Jack on this jaunt, is told that Z88K plans s.e.b. this year W1BIX notes that CNSHU, a co-op manned by CN8s IB IV HX and others, specializes in Statesiders on 28,178-kc. phone. Pray respect the gang's directional CQs "During the period June 7th to July 14, 1958, I intend a photographic-hamming safari as Z83JO/P (Z1D6), VQ5JO, VQ4JO and VQ3JO, stopping in game reserves for several days at a time. I'll be using a 20-watt B2 transmitter/receiver on c.w. and a.m. The antennas? As much wire as I can erect." This from Z83JO, and Mal will augment this gear with more potent paraphernalia if the opportunity arises VQ2RG shows on 10 c.w. around 2200-midnight GMT when possible, pursuant to WAS and chats with such favorite North Americans as W8KX W6RLP and others are intrigued by the spring 28-Mc. c.w. fad inspired by ZD78A: St. Helena Roulette. Despising zero-beaters and tail-ending. Bob, usually found near 28,060 kc., is likely to answer calls anywhere from 28,000 kc. up into the phone subband. There are two vociferous schools of thought on this procedure, each of which argues with some merit. No. 1 favors this m.o. as a means toward more equitable QSO distribution among the power levels while discriminating against over-ager beavers. No. 2 votes against the practice because of decreased over-all QSO rates and a tendency to spread chaos and QRM throughout an entire amateur band. What's your brand? VQ4EO, rolling across 8000 tortuous and torturous miles of Africa in a British Land Rover, tallied some 2000 DX QSOs from nine countries this spring, most on single sideband. One must agree with W4IYC: "I think it was quite a feat for one man. Roads are nonexistent in some places and Paul tells me that on many occasions the only thing that never failed him was ham radio and the fellows in the States who were tracking him."

Oceania—Certification-seekers should be interested in the Coral Island (Guam) Radio Club diploma available to those who contact three or more members after January 1, 1958. W9NTJ/KG6 lists himself, K2ILQ/KG6, K6TSQ/KG6, W6IVL/KG6, KG6s AGK AGW AGX and AGY as active possibilities. "QSLs are not necessary, for loss can be checked here." VK6EJ seeks Del., Idaho, Me., Nev., the Dakotas, Utah and Vi. to complete an inside 48 Straight. Jack fires his trusty 807 into antennas ranging from 500-foot Vees to parasitic rotaries, receiving with a BC-348 and SX-17. Power is self-supplied, a two-h.p. petrol-pushed 230-volt source. VK6EJ's junior op, a handy

guy to have around, enjoys constructing the OM's steel towers and bug keys As verified by W3ZKH and others, that ZM1BL still passes out quite a line on 10 meters, apparently acting as Oceania's answer to South America's 2J4AA W2HMJ finds VK9XM assisting ZC3AC's Christmas output, and VK9BB aiding VK9JF's Cocos-Keeling efforts, all on 20 c.w., and Aug still stalks elusive V84BA near 14,086 kc. at 1300 GMT. Sundays VE1PQ finds that VR3R formerly signed VE2AQ on the Magdalen Islands in the Gulf of St. Lawrence. Booming Line Islands amateur activity now poses a local QRM problem at a spot heretofore quite rare Similar difficulties down Antarctica way, judging from W1A's *Amateur Radio*: "Individual ham activity at Mawson Base may have to be curtailed due to the large number of hams in this year's party; a roster sharing the limited time seems to be the only solution. Mawson's main transmitters are in operation for approximately 15 hours daily, another factor to be considered." Mawson is home to VK6s BC DA IJ PK RA RB RO and RR, Davis Base shelters VK6s AT and TC, and Macquarie is represented by VK6s HK KT and PT KR6BW struggles for more Novice QSOs but the going is rough on 15. "Also tried 80 meters but no far I've heard nothing but commercials." W1JYH bumped into K1DHD pumping r.f. our way from KX6BP.

Hereabouts—Fernando pointers courtesy W0YFE/W0YJU, W1WPO and PY1CK: PY78C will keep a 32V-2 warm on 14, 21 and 28 Mc. now, mostly phone; PY7AFN expects to use 7- and 14-Mc. c.w.; PY7s BAB BAD and LR, also stationed on Fernando de Noronha, cling to 40-meter phone. Airman PY1BNU is transferring to the island and may become PY7BAE KPAKD, a cool key man from 'way back, will complete requirements for radio-telephone WAS, of all things, when he corals Utah. K6JGN has FYYTH relocating to Martinique with his 90-watter and NC-98 W4s AIS BPD and CYY continue to batter each other with local Carolina QRM in the 20-meter donnybrook W8KPL, whose much-used 10-year-old 813 shows signs of fatigue, figures he's qualified for DXCC-5 after auditing his voluminous QSL file WRQR continued Caribbean s.a.s. peregrinations through April. Operational sorties at VPs 4TE and 5RS produced tallies of 300 and 200 QSOs, respectively W4KFC reports that the big East Coast snow job in late March put W3s GRF and MSK out of order for the final ARRL Test sessions, and other DXers acknowledge extensive skywire damage in that mushy blow HRIEZ returned to Uncle Sugar, turning his 3-cl. spinner and 20A exciter over to HRIJH K7AYU grants Wyoming contacts on 21,300 kc. during daylight hours and on 7250 kc. at night Cuba's Matanzas Radio Club offers a certification that calls for ten CMS/CO5 QSOs dating after February 9, 1958. For full details consult RCM at Bajos del Palacio Provincial, Mantanzas, Cuba W1QMS/VE1 (A3) and W1UXK/VE1 (A1) will dispense P.E.L. contacts from the 5th through the 12th of next month on bands 160 through 6 meters, mainly on 20, DX-100, HR-50, Gonset II, TBS-50C and HQ-129X equipment will perform W1AZW made it 130 worked with his scrappy little 30-watter While functioning as Canada's farthest-north ham during the winter of 1957-58, VE8AT found conditions as follows: "Seventy-five meters was open most of the winter with lots of VE8s round-tubine; 40 was not prolific; 20 proved usable almost around the clock and bore the brunt of traffic work as well as DX efforts; 15 and 10 stayed in only for two or three hours at a time. I extend a large vote of thanks to the 14-Mc. W/K/VE gang who passed up DX regularly to handle all our traffic. Swell job!" K6ZDL searches for data on the present whereabouts of 1957's VS1HC, W7VY beseeches all for current dope on ex-EPLs RV (45) and AL (47), and W8DLZ desires HZ1HZ and UJ8AF QSL hints

..... Ohio Valley Amateur Radio Association's March KC4AF fireworks produced some 7 kilocalls with 80 countries, plus another thousand maritime-mobile QSOs. Hair-raising landing difficulties, a critical water shortage and frying temperatures failed to aag the DXpeditionary spirit of the club's Navassa task force, W4KXV, W8 EZF FGX and RSW. Wrangle next, fellows?

(Continued on page 178)

UA1DG is a call not unfamiliar to North American 21- and 28-Mc. DX devotees, for Anatol persistently pursues his WAS on those bands with a 50-watt transmitter, ground-plane antennas, Super-Pro and Köln receivers. Son Albert signs UA1FE and 12-year-old son Toly diligently listens as s.w.i. UA1-604. UA1DG is one of a dozen amateur stations located at Petrogof (Petrodvorets), site of Peter the Great's palatial estate just outside Leningrad.

(Photo via W1VG and UC2AF)



Strays

The daily newspaper is often an excellent source for our file of Strays. One recent news story reported on a couple of Novices who worked daily with vacuum tube volunteers and other complex equipment, while in another paper there was offered for sale a 45 Wyatt amplifier.

On the other hand, sometimes we are the ones who are fooled by the terminology. One of last month's Strays joked about the fan that reportedly spread microwaves around in an oven. Well, by gosh, W1YLB and K8ERV have both written in to say that that is exactly what *does* happen. The fan is called a "stirrer" and its purpose is to reflect the microwave energy in many directions so that "hot" and "cold" spots are avoided.

W2CZX, of 109-14 139 St., Jamaica 35, N. Y., is trying to obtain some old W2EPM QSLs. Prior to 1942 this call was issued to Paul Pfeffer. Mr. Pfeffer's daughters would like the



Col. George J. McNally, W3NAL, commanding officer of the White House Army Signal Agency, addresses the Dayton Hamvention Banquet on "The Amateur and Communications for the President of the United States."

Photo by R. L. Gallagher

cards as souvenirs and W2CZX is helping.

ZLIMS reports a bit of phone nonsense he overheard one night. A ZL2 stood by with the remark that, "Well, OM, we'll say goodnight to you and your good wife—we are single here. . . ."

K2GMZ successfully administered the Novice exam to the 80-year old father of W2ZS.

To celebrate British Columbia's 100th birthday this year, an expedition has been organized to climb Mount Fairweather. The call VE7BCC has been assigned to the expedition and VE7ALE is organizing communications. Besides the usual expedition communications, the station will be active on both phone and c.w. Contacts will be confirmed with a special Centennial QSL. Look



The South Plains Amateur Radio Club of Lubbock, Texas, has prepared an Amateur Radio Historical Exhibit for the West Texas Museum on the campus of Texas Technological College. Here are W5KTX and W5KCP examining an old relay and a spark-gap transmitter that have been loaned for the exhibit.

for VE7BCC on the air between June 14 and July 13.

Now we have another claimant for the longest QSO of record. K2SVL says that he and K2UVM maintained contact for a solid even thirty hours on August 3-5, 1957, using two-meter phone.

Radio amateurs in Union, N. J., are helping to celebrate Union's Sesquicentennial by plenty of mention of the anniversary on the air. Special QSLs have been printed for 21 of the hams in town, and a ham station will be set up at the local high school during July as part of the general Sesquicentennial exhibit.



Hams who receive signals bounced off the moon by the U. S. Army Signal Engineering Laboratories, Fort Monmouth, N. J., and report them, get this acknowledgement card. The space-age method for tuning radios to satellite frequencies is part of the Project Vanguard program. The card was designed by W2KJR.



Operating News



F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr. Phone

How Not to CQ. In one week of operating KN4TDN reports hearing a CQ sent in tortured code in four different ways . . . NNQ, KEQ, CMA and CGT. He writes, "It really would be most interesting if all operators could *hear themselves as others hear them.*" Undoubtedly it would give us a more outstanding or utopian amateur radio too, at the least some better fists!

All experienced amateurs have observed that such poorly spaced code is bound to draw many fewer replies. Operators with good fists as well as good stations are discriminating, value their time, and are looking for operators to work who have, through practice or experience, achieved a higher degree of operating proficiency than shown in such distortions of the intended calls or characters! May we suggest some private critiques in clubs and code groups in which we frankly tell each other which letters are incorrectly sent. Some tape recording and listening-back can help a fellow recognize some of his own defects also. We also suggest consulting those published dates of WIAW code runs when we follow *designated QST* text accurately. Rigging up an oscillator or buzzer to a hand key and trying to key in step with the WIAW tape as you listen can help a lot in overcoming the errors that must not become habits. Work on poor spacing and any characters not perfectly formed. Soon you will be sending clear and readable code. You will be surprised how clean sending can step up your number of contacts and results.

73. Originally published in a U. S. Naval Operations Bulletin, the following from April 1934 *QST* will answer many questions of current day amateurs about "73." "Many have often wondered where the telegraphers conventional signal of greeting, '73,' had its origin. It dates back to the early days of telegraphy. During the Civil War, Andrew Carnegie administered both the telegraphs and the railroads. Shortly after the war the Order of Military Telegraphers was organized. The members of this order had a fine 'esprit de corps.' During the Civil War, telegraphy was just as new as radio was during the World War and the operations of armies depended in a large measure upon the intelligent use of the telegraph. Upon Andrew Carnegie reaching the age of 73, the Order of Military Telegraphers gave him a testimonial dinner and from this the term '73' came into being as a symbol of good wishes."

Amateur Operator License Suspensions. Additional Public Information releases of the Federal Communications Commission record the following license suspensions:

FCC ordered (March 13, 1958) that the Technician Class amateur operator license of Robert L. Kreps, Blue Island, Illinois be suspended effective from April 1, 1958 for a period of two months, that the license be turned in to the FCC and K9CTA not be permitted to be operated by any person in the 60-day period, *it appearing that the licensee on eight (specified) different dates during 1957, operated K9CTA in the 1800-2000 kc. frequency band, using A-3 emission, contrary to the terms of his license and in violation of Sec. 12.23 of FCC rules; also it further appearing, that said licensee on these dates and while engaged in amateur operation, failed to keep an accurate radio station log, a violation of Sec. 12.136.*

FCC ordered (March 19, 1958) that the Technician Class amateur operator license of Denio Canton, Miami, Florida be suspended effective from April 8, 1958 for a period of two months, that the license be turned in to the FCC, and K4HFV not be permitted to be operated by any person in the 60-day period *it appearing that the licensee on various occasions and on June 7, 10 and 11, 1957, operated the transmitters of amateur stations K4HFV and W4IDJ on the frequency 7200 kc., using A-3 emission contrary to the terms of his license and violating Sec. 12.23 of FCC rules, and it further appearing that licensee failed to maintain an accurate radio station log, violating Sec. 12.136 of FCC rules.*

Come to think about it. Interference is the common complaint of practically all hams, especially those newer to the bands we all share. For the Novice with one crystal, the acquisition of additional crystal frequencies offers some escape from the fantastic QRM that sometimes limits his results. Surveying our band occupancy indicates improvement feasible just by spreading ourselves more uniformly throughout all our amateur holdings. Contest operating sometimes starts "from the low edges." Using any old band for any old distance may get by, but intelligent operating calls for use of the best-suited band for a given distance, time and season.

In the summer operating period some scheduled net operations we think, could be shifted advantageously to a higher frequency band or else the hour changed where work schedules permit for better reception of all the net signals in the given area. But how to cut interference?

Short calls have often been emphasized in these columns. Cut out the long ones. If a fellow tunes to your signal he'll hear you on a short call. Or if he fails to tune to your signal of course he'll never hear you on the long call either, and the short one is a time saver.

Zero Beating. It should not be necessary to point out the virtues of zero-beating for convenient tuning, as well as conservation of frequency, for all members of any net. The same applies to each pair of operators keeping a schedule. It helps the two operators and *all others* to be precise in the matter of zero-beating signals. We live in a time when most seasoned operators have

reasonably good equipment, stable v.f.o.s making this desirable technique possible. Cultivating correct operator procedure to accomplish quick and accurate zero-beating is something to work for though!

The usual fault, we think, is in an operator's failure, when zero-beating, to first set his receiver to true ZERO with his antenna off the receiver. (To zero the transmitter with some audio frequency pleasing to the ear to copy but not first putting the receiver to the point where it is zeroed with the incoming signal, results in setting the transmitting frequency to that audio difference with the net frequency!). The Detroit Amateur Radio Association's *QMN Bulletin* humorously suggests the possible designation of a brand new Q signal (for netters that can't zero or QNZ the net frequency) to indicate: I HAVE NOT USED A COHERER FOR SEVERAL YEARS AND YOUR SIGNALS ARE WELL OUTSIDE THE PASS BAND OF MY RECEIVER.

Got Your Worked All States Award? During 1957 ARRL issued 1452 WAS certificates. This represents an increase of 15 per cent on the year; interest was already at a high point. Working all states is a significant operating achievement. Practically all FCC licensees aspire to this award, and many amateurs in other countries additionally have their eye on it. The fact that 12 per cent of the certifications go to amateurs outside the United States and Canada is an indication of the growing interest of amateurs all over the world in working all the states for only about 28 per cent of the world's amateurs are in other countries. Some amateurs right at home take years to get the QSLs from the "more difficult" states such as Utah, Rhode Island or Delaware. On the other hand the more ardent newcomers sometimes make WAS by unremitting efforts during their first apprentice year.

Mixed-submissions of phone and c.w. cards may be presented for our award, or your work accomplished in one band or all bands may be submitted likewise for WAS. *It is not necessary or desired that the work be accomplished on a single band or by a single mode.* We occasionally on specific request type on the award a statement for all-phone or all 3.5 Mc. work, if such is the case and your cards indeed all show such confirming evidence. We never endorse that work was accomplished with a particular equipment, or specific power level or such things that obviously are either beyond our ability to check or in any case beyond the scope of the written evidence in any degree. *Operating Aid No. 8* continues to be available as a form to assist in placing your states in alphabetical order when submitting the cards direct to ARRL for WAS.

Some pointers on submitting for WAS. There are a couple of points concerning WAS that we wanted especially to mention, to forestall numerous questions. A move of less than 25 miles comes under the definition of "one location" for WAS purposes. Cards received before and after a move within this limit may be used as confirmations. Novices whose call prefix changes

on receiving their General Class tickets may submit QSLs received before and after this call change, as long as their work continues to go on from the same location.

To summarize, if you are versatile and use all bands and modes you will probably get your WAS much faster than if you insist on one kind of amateur radio only. Moving your station about is permitted within a 25-mile radius. It's best not to include any mobile work cards with your confirmations sent in for WAS; if you send such a card then you must certify where you were for that contact in proof that it comes within the 25 miles of your home station. While speaking of mobile, your capability to drive to the 48 states after your cards may be fun. Mobile all over the U. S. A., however, is not rewarded by a WAS, since it isn't the same achievement as earning one from your home location! A postmark may help identify a card not otherwise identified as to source or location by its originator. Postmarks, however, are not a requirement; much of the mail these days goes through QSL bureaus anyway. Before you send them in be sure your QSLs each have all necessary data on them to confirm a QSO. If you send us in 48 cards and some do not show your same call on each, you should, if you expect credit, explain the circumstances. Give the dates and locations when you used the calls involved, also straight-line distance between the two points, if work was not all from one residence or location. Good luck in going after your WAS, if you haven't this certificate in your shack.

WIAW Goes to 1820 kc. Because of the change in general use of the 160-meter amateur band due to its expanded use for Loran, WIAW has had to shift its operating frequency from 1885 kc. to 1820 kc. The full current WIAW schedule (page 100, May QST) could not reflect this, but for Official Bulletins, our 160-meter General Operating Period and Code Practice, look now for WIAW on 1820 kc.

Your comments on our proposal to discontinue sending Code Practice addressed to amateurs on this 1820-kc. frequency are requested. In view of a prospective increase in general amateur occupancy of this 160-band sector, and the ability of users of our tape-sent code-practice to receive WIAW on 3555 kc. and our other designated frequencies a further change is planned for June 30. WIAW will maintain the Bulletin Service to 160 users, but discontinue the hour of 1820 kc. practice normally starting at 2130 EDST daily, effective June 30, unless a large number of users before then indicate the wish that it be continued.

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350



With the AREC

It is natural enough for civil defense officials to misunderstand the aims and purposes of RACES and to think that they have the right to use the RACES segments of the amateur bands in a manner entirely to suit their own aims and convenience. But when amateurs themselves begin to adopt the attitude that RACES is civil defense and not amateur radio, it is time that we begin to examine among ourselves just what RACES is, what it is for, why it was established and how it is supposed to work.

Perhaps the best way to conduct such an examination is to start out with a very basic question: What is amateur radio? Is it a mass of irresponsible hobbists bent on their own enjoyment? Is it a training ground for operators and technicians, a place to get their feet wet until they can step into better things? Is it a military reserve of operators, technicians and frequencies? Is it a playground for persons commercially engaged in electronics? Is it a "no man's land" of personnel and frequencies ripe for exploitation by whoever can offer its occupants something that will attract them? Is it organized, unorganized or disorganized? Is it beneficial or inimical?

To some extent it is each of these. Who can deny that a great many amateurs are interested only in enjoying themselves? That many who start out as amateurs "graduate" to better things? That the military reserve aspect is a very important one in retention of the frequencies we use? That many commercial radio people get amateur tickets so they can "play around"? That many agencies exploit amateurs and amateur radio for their own selfish ends? That some of it is organized, some of it not organized, and some of it strictly balled up? That in some respects it is beneficial both to amateur and the public, in some other respects inimical?

One thing is certain: that amateur radio is a service and must continue to be one if it is to continue to exist; that amateur radio exists at all only because it qualifies as a service; that it is governed by FCC regulations for the Amateur Service and by international documents that likewise refer to it as such.

RACES was developed as a means for using the Amateur service in civil defense communications. To a great extent we were already organized for emergency communications when RACES came into being; the RACES rules, in effect, permitted us to make our already-organized facilities avail-

able for civil defense purposes where they existed, or to organize and offer such facilities where they did not. RACES is amateur radio as much as it is civil defense radio. The most beneficial service is and can be performed where amateurs go to civil defense officials with the story of what they can do, rather than to have civil defense officials start rounding up amateurs in order that they might use them and their frequencies.

Two disturbing situations arisen in recent months have brought on the above discussion. One is a case in which amateurs who are appointed radio officers by their civil defense directors are automatically appointed ECs. One amateur wrote to say that he had just received an EC certificate from his SCM, and what he wanted to know was: What is an EC? After all, he told us, his radio officer appointment was only a gimmick to allow his civil defense people to get RACES radio equipment under matching funds; presumably, he had no familiarity with emergency communication or any real expectancy to participate in it up to that time.

The other situation had to do with civil defense officials operating RACES mobile and fixed equipment outside of RACES drills, even though they had only third class operator permits, and with a proposal to use RACES amateur frequencies for triggering devices to sound sirens and other warning instruments. The disturbing thing about this was that although the amateur who called it to our attention deplored it, he also mentioned that some local amateurs not only condoned it but actually assisted in making it possible.

We have several observations to make. One is that since RACES is an amateur service (don't you forget it or allow anyone else to forget it) we have the same responsibility for self-policing in that part of amateur radio as we have in any other part, this regardless of who the offender is or what high position he may hold in local civil defense. The second is that we should resist creeping infiltration of amateur frequencies by persons or organizations bent on using them for purposes not within the intent of the amateur regulations. The third is that although amateur radio can and should become a valuable adjunct to civil defense communication, we should see that it remains amateur radio and does not become entirely civil defense radio, facilities and equipment offered by the latter notwithstanding.

The fourth, somewhat unconnected with the above but nevertheless worth mentioning, is that RACES is not the only civil defense communication facility, not the only c.d. radio facility, and in a good many cases not even the principal c.d. radio facility. We have our place, and it is an important place, but many c.d. officials feel that they can get along very well without us until or unless we can convince them otherwise. So let's participate in this phase of our amateur service with patience and humility, but at the same time with pride in our own organizational status and ability

Central Texas Amateur Radio Club members took part in a simulated explosion in Waco, Texas, on March 11, assisting the McLennan County Chapter of the American Medical Society and the Red Cross in supplying emergency communications both locally and with outside points. Six meters and 75 meters were used, both s.s.b. and a.m. Here's the group with some of the gear they used. From left to right: first row, WSIL, W5BHX, W5NRO, K5LFA, W5WYI; second row, W5FZB, W5TVA, K5MBZ, K5COK, W5DSG; third row, W5KAU, K5BLI, W5NCD, K5CIC, K5CLG, W5TVZ; fourth row, W5VHF, W5BOO.





Ten meter net control in the Miami Valley's "Porchlight Parade" was W8FPZ, whose station (with K8BE at the controls) is shown here. This station was linked with the main control station on 2 meters.

and determination to see that this status is recognized and our regulations observed.

Hey, fellas, how about putting dates on things you send in? For this month's column we had to reject four emergency items for writeup because three of them said "recently" and the other one said "last Friday night" without any reference date. We'd like to have our writeups tell when, where, how, what and who. Phrases like "last Friday," "yesterday" and "recently" may be all right for newspapers, but for QST we have to know the date for future reference purposes. Will you help us out? Tnx.

Within minutes after a snarling tornado ripped through Cochran, Ga., on January 24, amateurs began flashing word of the emergency to civil defense and Red Cross relief agencies. Since the winds had swept down telephone lines, the first word of the emergency was relayed by W4PIM and K4CZR of Atlanta. W4VVO/m was dispatched to the scene of the disaster, where he set up at the Cochran police station and immediately began relaying requests for relief supplies and information on the damage done. The state civil defense director was advised of Cochran's needs via W4BKK. Other amateurs assisting included W4s TJS YEK CFJ, K4s KEC AUM GGD and AT.

On February 16 the Borough of Tamaqua, Pa., was declared in a state of emergency because of heavy snows, and amateurs were requested to activate their stations on an emergency stand-by basis. About 15 local amateurs remained on alert for two days, handling information on road conditions and digging-out operations. Most other forms of communication were inoperative because of the storm. Two of the rural operators were completely isolated but able to convey their problems, mostly concerning food and fuel, to the borough hall by amateur radio. No assistance was needed from state level. Amateurs taking part included W3s KJJ PTL RZV ZPW IGH CMA ZXF EEK FLJ BGR ZIV DJZ PTM ZRQ. — W3ZRQ, EC Schuykill Co., Pa.

The Mount Diablo Amateur Radio Club was called into alert by the civil defense director at 1630 PST on February 24 because of the pending flood in that area. Control station at e.d. headquarters, W6AIL, was operated by W6AIL and K6KRF. W6QEN operated at the county garage in Martinez to dispatch trucks with sandbags to needed areas. W6LGW used emergency power at his Alamo QTH and checked in net members as they came home from work. The club net operated on both two and six meters; following the regular check-in by W6OHR (on 2 meters) and W6CGS (on six meters), net control was taken over by W6AIL on both bands, after which members stood by for emergency traffic. The emergency was declared over and the nets secured at 2045 PST. The following additional stations took part: W6s EDR EFI VNI HOF FKX IHR JYZ KTF LKE PIL PIR RVC, K6s ILH IMV IRB JAV JAY KRF VPC ZPB AQ KYT OCF/m OGU RMD/6 QXY, W6UFEK. — W6LGW, EC E. Contra Costa Co., Calif.

Informed that high water was threatening some dams on Rancocas Creek in Burlington Co., N. J., on Feb. 28,

Moorestown Radio Officer W2WKI made contact with K2-DGQ, who was nearest to the threatened area. A report of the status of affairs indicated the need for mobiles to be stationed at the dams and keep officials informed. By 0100 Mar. 1 K2JAK/m and K2GOK/m were on their way to the lower dams, while the county e.d. headquarters station in Mount Holly was manned by W2ESG and K2GFP. Later, relief operators W2KHW and K2KPF were sent to the sites and joined by K2SOX, K2MOV and K2VPA for further relief chores. Operation was continued officially until 0340, but most of the stations remained active through the night.

The worst snow storm in the history of Mercer Co., N. J., started on March 19 and continued throughout that night and next day. The wet, clinging snow took a deadly toll of power and telephone lines so that these utilities were greatly affected. By 1500 on March 20, Mercer County RACES was activated. From the start, it was necessary to operate the headquarters station on emergency power, and by 1830 a state of emergency had been declared. A two-meter net was set up between county headquarters and 8 surrounding municipalities, with a six-meter mobile for contact with Princeton. Portable generators and batteries were used for power in nearly all cases. All messages filed were passed through to destinations despite some necessary relays, and many new operators "got their feet wet" in this their first emergency experience. Particular credit goes to W2HX, county radio officer, whose ability made it possible to operate the whole airport, where the control station is located, on emergency power; and to W28VV, who operated from his home despite a recent operation and was instrumental in locating operators for Ewing Township when it became impossible to make contact on the land line. Thanks to K2HIW for this report.

Just to keep active, AREC and RACES units frequently participate in special activities in cooperation with or assistance to various civic agencies or police. Such activities are not only good for practice and morale, but also are good publicity. We summarize, herewith, a few such exercises that have been reported to us.

Three groups participated in Halloween patrols last October 31. In Rockford, Ill., the Rockford Six Meter Emergency Net assisted the Winnebago County Civil Defense authorities using six mobile units and the e.d. communications truck for a control station, reporting direct to the sheriff from the truck's unit on 47.5 Mc.; the amateur frequency was 50.7 Mc. In Wasco County, Ore., the Dallas Amateur Radio Club cooperated with local police authorities in "Operation Vandal," this time expanding operations from last year to cover the whole county. A local police reserve officer rode in each amateur mobile unit to take care of any law enforcement problems, relying entirely on amateur radio for communications. Six mobiles participated, and the amateur group also supplied equipment to a number of points that were normally without e.d. radio equipment. The Western Pennsylvania Mobiles, a ten-meter emergency group, assisted police in Oakmont Borough, Pa., in similar fashion. Nine amateurs used their own equipment and their own gasoline for the three-hour period, while two others manned the control station on 29,360 kc.

The Mobileers' secretary, W3ZUW, received letters from the Oakmont police chief and the c.d. auxiliary police in appreciation of their services.

On January 30, for four hours in the evening the Miami Valley (Ohio) C.D. Authority RACES and AREC operators worked with the Dayton Amateur Radio Assn. to supply 34 mobile units to help speed up collection of police contributions in a "porchlight parade" held in the area. C.D. headquarters was set up as communications center under the call W8RXXM. Frequencies of 147.15, 50 and 29.6 Mc. were used with net controls on each band, all linked to the communications center on 145.23 Mc. The entire "Operation Polio" was a great success, thanks in great measure to the turnout of amateurs to assist.

In Cuyahoga County, Ohio, the AREC in cooperation with the Fifth Area Mobile Police and the Ohio National Guard participated in the March of Dimes drive on January 29. A portable control station was set up at headquarters and seven mobile units were used in seven convoys, plus three with reserve units, two for investigation purposes and one as a photographer's car, making 13 in all. Six meters was used for the entire activity and worked out exceedingly well. Thirty-four amateurs participated and received much praise from all agencies served. — W8AEU, EC Cuyahoga Co., Ohio.

In Memphis, Tenn., 18 mobiles operating on 2, 6 and 10 meters assisted in the Heart Fund Drive on Feb. 23. Club station W4EM was set up at the headquarters to control mobiles on 2 and 10, while K4BSR did the controlling on six from his home. A number of other amateurs also assisted. The Heart Association was very lavish in praise of the communications facilities thus provided.

On March 16, the Cuyahoga County AREC group again came out, this time to provide communications for the Easter Seal drive. Mobiles were used to pick up the money and bring it to headquarters, maintaining contact all the way. One mobile loaded with money blew a tire in a remote area and summoned immediate aid by radio. Twenty-one amateurs took part, with ten mobiles, two relay stations and one portable as net control. A total of 275 communique were handled, all on six meters. — W8AEU, EC Cuyahoga Co., Ohio.

February SEC reports showed a great improvement over the January totals. Twenty-six reports were received, representing 6455 AREC members. This is an increase of four reports over the same month in 1957, and a small increase in AREC members as well. New sections heard from were R. I., Utah, Minn., Mich., S. N. J., Wash., Mo. Ore. and Maritime. Sections reported for the second time in 1958: Ala., San Joaquin Valley, Santa Barbara, Mont., Va., N. M., Colo., NYC-LI, E. Fla., Ga., Ont., N. Texas, Conn., E. Bay, Santa Clara Valley, Md.-Del.-D. C., Wis.

RACES News

W3BUD reports that they have talked for years about RACES in St. Mary's County, Md., but now they've finally done something about it. Things came to a head when a delegation consisting of W3BCP,



W3BUD and W3ZZK visited the c.d. director and asked him point blank if he intended using amateurs. When he replied in the affirmative they said, in effect, "Let's stop fooling around and get going." As a result, W3BUD got himself appointed C.D. Communications Officer, W3ZZK radio officer and W3BCP alternate r.o., and they spent the next three weeks writing a communications plan and getting a dozen local amateurs interested. They now have a ten meter net in operation and the RACES plan is on its way to approval. Civil Defense headquarters has a RACES station installed. W3ZZK is EC as well as RO.

W9PSP has sent us a map of the Illinois C.D. Amateur Radio Services, showing the locations of RACES station throughout the state, indicating target cities, control stations, and locations of stations in the Illinois Emergency Net and Illinois CW Net; also the division of the state into 13 RACES areas. It's a very interesting and comprehensive study and represents the results of the first survey of RACES facilities throughout the state.

A.R.R.L. ACTIVITIES CALENDAR

June 4: CP Qualifying Run — W6OWP
June 14-15: V.H.F. QSO Party
June 23: CP Qualifying Run — WIAW
June 28-29: Field Day
July 3: CP Qualifying Run — W6OWP
July 19-20: CD QSO Party (c.w.)
July 22: CP Qualifying Run — WIAW
July 26-27: CD QSO Party (phone)
Aug. 6: CP Qualifying Run — W6OWP
Aug. 20: CP Qualifying Run — WIAW
Sept. 4: CP Qualifying Run — W6OWP
Sept. 17: Frequency Measuring Test
Sept. 18: CP Qualifying Run — WIAW
Sept. 20-21: V.H.F. QSO Party

San Bruno, Calif., has entered a new phase in its c.d. planning with the election of a new civil defense director who is also City Manager. W6VYH is radio officer. A CD Radio Club has been formed and received the call letters K0PVJ. The San Bruno RACES plan was approved by FCC on July 18, 1957.

The RACES group of Norfolk, Va., held an emergency drill on March 27, observed by officers and guests of the surrounding navy, coast guard, air force and army installations. The operation went off very smoothly, with net control on 28.7 Mc. and frequent check-ins from the state control situation in Richmond. The few bugs that popped up will quickly be ironed out.

TRAFFIC TOPICS

The mail these days brings pleas from zealots of s.s.b., RTTY and high-speed c.w. to push the use of these particular methods in handling traffic. While true that each has something to be said for it one thing that is apparent in most cases is that most of these zealots are interested mainly in s.s.b., RTTY or tape c.w. and only incidentally in traffic handling; whereas, in this column, we are interested mainly in traffic handling and only incidentally in fostering new modes of communications. So, more often than not, we can't get together. They talk about filters, gadgets and results while we talk about routings, schedules and liaison. We just don't talk the same language. Perhaps what we need is some middle man who is interested in both traffic work in general and traffic by a specific mode or method in particular — an interpreter, you might say. Or perhaps more interest in traffic work and less in traffic gadgetry is called for.

We are of the old school of traffic men, the type who just doesn't go overboard for new methods unless they are tried and true and unless there is possibility of liaison with the older methods (e.g., c.w. and a.m. phone) that will continue to be used for quite some time. We don't like to see our traffic community divided into numerous special interest groups and thereby weakened. But what about some of these newer (not so new, really, but new to amateur radio) methods that are being proposed?

Well, let's take them one at a time. On numerous occasions we have been told that s.s.b. is a natural for phone traffic handling, that it's got the old a.m.-carrier stuff beat all hollow. By use of voice control, you can talk as naturally as you do on a landline telephone. We've listened, and this is true. It would make phone traffic handling easier, faster, and even more accurate. No reason why it shouldn't be used — by those amateurs who have s.s.b. equipment and are interested.

Same with RTTY. It's beautiful just to sit down and type out your traffic and know that it is being reproduced at the receiving end just as you type it — provided a lot of things. If you punch a tape for transmitting, a steady 60 w.p.m. can be maintained. But you can't use it unless you have the equipment, install it and get it working; and even then you usually have to fiddle around a while before you can get it to work properly.

Same with high speed c.w. A few amateurs have perforators and sending heads. Nothing is more beautiful to a good c.w. man than to listen to perfect c.w., which means machine-sent c.w. Not so long ago we conducted an experiment with K6EY in which he sent us his traffic at 70 w.p.m. while we recorded the signal on magnetic tape; we then played it back at half speed for perfect copy. The advantage? Only a reduction in on-the-air time. By using recorders that can reduce the speed by more than one half, the actual speed can be increased to as much as 150 w.p.m. slowed down to 37.5. Or, given siphon recorders and operators who can "read slip," speeds can be even higher. This may seem to be verging on commercial procedures, but actually these methods are for the most part obsolete in commercial circles, and that is one reason why used equipment to make them possible is gradually coming into the amateur market.

One very simple method that could be used in automatic relaying of traffic is "repeating" a c.w. signal by a higher-powered station or one better located than the station from which the signal originates. For example, traffic could be transmitted by a station on the west coast, automatically repeated by a station in the midwest for copy on the east coast. How? Simply by rectifying the output of a receiver to operate a keying relay. There are some problems involved, both technical and legal, which we will not go into here except to say that they all seem capable of solution.

We are not necessarily recommending universal adoption of these methods, but only mentioning them as something worth thinking about. Amateur traffic handling doesn't just stand still, is not a cut-and-dried invitation to boredom. It has interesting and challenging organizational and experimental aspects which tend to attract some amateurs who have not heretofore been interested in traffic work for its own sake. We don't think that they should be tossed out or ignored as idealistic dreamers who, by proposing adoption of new methods, are "ruining the game." On the contrary we feel that these new methods and the people who are proposing them and experimenting with them should be welcomed and listened to, and what we old shellbacks should think about is how their ideas can be used to make our conventional traffic routes more effective and efficient.

Net reports. North Texas Oklahoma Net reports 31 sessions, 1116 check-ins and a traffic total of 310. Transcontinental Phone Net reports a traffic total of 6175, comprising 2563 for the First Call Area, 2694 for the Second Call Area and 918 for the Fourth, Ninth and Zeroth Call areas. Early Bird Transcontinental Net reports 31 sessions and 1027 message handlings. The 7290 Net reports 44 sessions, 1448 check-ins and a traffic total of 587. Interstate SSB Net reports 369 message handlings with an average check-in of 58 stations and average time in session of one hour, 32 minutes.

National Traffic System. We have often said that the NTS has two principal objectives: the systematic handling of traffic and training of traffic men, not necessarily in that order of importance. A point that seems to need to be made clear in connection with the training objective is that because this is one of our aims it does not follow that all NTS nets should or must be beginners' nets, or that beginners should be welcomed into all NTS net levels. Such a concept is as ridiculous as welcoming grade school students into college classes, or college freshmen into graduate seminars. There are levels of training, and each must be achieved before one can go on to the next. This is axiomatic, logical, common horse sense.

Yet, we have seen tendencies among some of our high-level nets to make the beginner feel at home even to the extent of tearing down the net's efficiency. Let's face it, at regional, area and TCC level we aren't beginners in code or message-handling procedure. Those things are prerequisite to participation at that level, they are (or should be) second nature to us by then. As we proceed up the ladder, the traffic-dispatching procedure gets faster, more clipped, less informal. Our training then is not in sending code or the form of a message, but how to operate in snappy, efficient nets, the use of QN signals and other net procedure signals, how to be brief in giving and receiving instructions; in other words, not so much in how to handle traffic as in how to handle traffic with efficiency and dispatch.

The place for the code beginner is in a section (or other) slow speed net. The place to learn the fundamentals of

message form, traffic handling and net procedure is in the section traffic net. When you get into the regional net, you're in traffic college, and area nets and TCC are for graduate students. Code speeds get higher, procedure is based on the assumption that the operator already has experience with the basic fundamentals and is entering on a new, advanced phase of this work. An operator without such experience is apt to have a rough time. It is customary, when a beginner stumbles into a regional or area net, to give him prompt QNX in order that the net's business can proceed without delay. Often such a beginner is resentful of such high-handed procedure, so the NCS should drop him a card explaining that this is an advanced net and that it has a great deal of traffic to handle in a limited time, that no offense was intended. Suggest that he participate in his section traffic net, and send him (or ask us to send him) a copy of CD-24 and a net directory.

We don't recommend any codespeed minimum or maximum on NTS nets, but we do think that each NTS net should remember its mission and set its operation accordingly, both as to code speed and procedures.

Net	Sessions	Traffic	Rate	Average session (%)	Representation (%)
EAN.....	25	1355	.914	54.0	99.3
CAN.....	31	1728	.967	55.6	100
PAN.....	31	1304	.631	42.0	93.5
1RN.....	26	424	.342	16.3	91.7 ¹
2RN.....	50	462	.366	9.2	99.6
3RN.....	42	345	.330	8.2	91.3
4RN.....	52	475	.237	9.1	67.0
RN5.....	52	893	.490	17.1	87.2
SRN.....	50	168	.183	3.4	85.3
9RN.....	61	1139	.464	18.0	86.5
TEN.....	93	1385	.457	14.9	65.3
ECN.....	16	199	.404	12.4	95.8 ²
Sections ³	921	8189	.....	8.9	.....
TCC (Central)	60 ³	886	.....	.....	.....
TCC (Pacific)	98 ³	1078	.....	.....	.....
Total/	.....	.....	.....	.....	.....
Summary..	1450	20030	CAN	12.5	CAN
Record.....	1450	20030	.....	13.9	100

¹ Regional net representation based on one session per night. Others are based on two or more sessions per night.

² Section nets reporting: SCN (S. C.); SCN (Cal.); Iowa 75 Phone; BN & OSN (Ohio); S. Dak. 75 Phone & S. Dak. 40 Phone; CN & CPN (Conn.); GSPN (N. H.); GSN (Ga.); STS (S. Texas); TLGN (Iowa); NJN (N. J.); ILN (Ill.); WSN (Wash.); AENB, AENP & AENT (Ala.); FN (Fla.); MSPN, MJN & MSN (Minn.); QKN (Kans.); CWXN, CSSN, HNN & Colo. Emerg. Fone (Colo.); Tenn. C.W.; QMN (Mich.); KNN KSN, KPN & KYN (Ky.).

³ TCC functions reported, not counted as net sessions. Another record-breaking month on NTS, despite lack of two regional net reports and one TCC report. Even for the record overall average-per-session we had to go back as far as 1950, the first year we recorded these statistics.

Smitty, K6DYX, puts out a neat little statistical bulletin and gab sheet for PAN each month. QRM from OM Cupid is effecting W2ZRC's resignation as of Aug. 1; 2RN certificates have been issued to K2RRH, W2ZVW and K2EFA. Teen-agers are the backbone of 3RN, with an average age of 15; W3s AFF CMN DTK GYP HIZ LXU and WHK. WASHJ has issued 4RN certificates to K4s GAT JKK and KNP; watch 4RN representation increase with new reps from C.Z. and W.I. Effective May 1, 9RN sessions will be at 1730 and 2000 CST; net certificates have been awarded to WPQCQ, K9GVD and K9GDQ. ECN is getting new life from the VE1 boys.

Transcontinental Corps. The following stations have been issued TCC certificates for the Pacific Area as of Mar. 31: W5DWB, W6s ADB BPT EOT HC PLG VZT, K6s DYX EWY GID GB, W7GMC, W6s KQD WMK. Nice going, guys and gals. These certificates don't come easy.

March reports:

Area	Functions	% Successful	Traffic	Out-of-Net Traffic
Central.....	60	95	1508	886
Pacific.....	98	93.9	2152	1078
Total.....	158	94.3	3660	1964

The TCC roster: Pacific Area (W6BPT) — W5s DWB IGO, W6s ADB BPT PLG EOT VZT HC, K6s DYX EWY HLR GES ORT GID, W7GMC, W6s KQD WMK.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for February frame:

Call	Orig.	Recd.	Rel.	Del.	Total
W2KEB	285	1616	1188	370	3459
W9BDR	32	927	813	11	1783
W7BA	28	538	520	17	1701
W8CA	20	787	784	15	1606
W8LXN	74	654	631	23	1382
W9DK	14	674	91	587	1376
W1U	967	121	82	36	1226
W9PI	13	599	542	57	1211
W6MCA	143	562	466	10	1181
W9XX	3	577	550	27	1157
W9GO	11	572	509	45	1137
W4PL	10	563	539	9	1121
W8PH	15	532	479	47	1073
W6HLR	111	455	516	151	1063
W3WJQ	39	471	404	106	1020
W3CUL	137	497	311	69	1014
W9NZZ	285	342	1	338	966
W8RCE	12	482	457	14	955
W8LGC	45	462	428	21	956
K8BCQ	2	485	0	451	938
K4ONQ	42	419	120	301	882
W7AEF	19	413	411	1	844
W7TUL	86	406	319	5	816
W6GYH	131	322	303	11	767
W1BXT	52	369	317	3	741
K2BL	96	322	273	47	708
W6YDK	118	285	119	165	687
W9HJL	13	337	331	5	686
K6MLL	18	328	331	8	685
W3WJQ	39	360	309	7	681
K4OAH	18	319	310	2	649
W9KQD	74	292	270	4	640
K4SHJ	81	307	212	23	623
W9WZL	4	323	259	619	619
W6GY	261	92	159	97	609
W4WU	7	300	259	41	607
W8WGU	138	232	118	110	598
W7PGY	32	281	237	41	594
W8IA	25	281	277	3	586
W3UE	16	293	256	19	584
K6CLS	127	249	189	17	582
K4DN	11	279	253	6	569
W1YBH	91	257	110	89	547
K4AET	3	273	262	7	545
K6GK	17	264	96	168	545
K6UOD	0	262	193	96	541
K6OZJ	11	259	240	19	529
K1BCS	330	101	84	13	528
W6GAR	10	254	258	6	528
W9GQX	70	251	191	15	527
K4KIN	8	267	249	2	526
W2VDT	30	242	173	80	525
VE3EAM	34	240	207	33	514
K8BFX	19	271	189	31	510
WPCZ	12	248	231	17	508
Late Reports:					
K1BCS (Feb.)	124	429	407	10	970
K6GK (Feb.)	41	337	125	212	715
W8BLI (Feb.)	4	256	247	3	510
W3ACK (Feb.)	10	248	238	10	506

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
K4CSH	32	578	570	8	1188
K4AIS/4	584	145	58	11	798
W4DFU	687	15	10	5	717

BPL for 100 or more originations-plus-deliveries

Call	Orig.	Recd.	Rel.	Del.	Total
K0IHA	394	K4EZL	124	W58MK	108
K4KJC	246	K5BNH	122	K9ELT	108
K9GDF	219	K5LZW	118	W9ETM	106
W4HCQ	185	K2YTD	115	W1KLG	105
K6GJ	179	W3TN	113	W9PCQ	103
W6ZJB	161	W5EGD	112	W9WBE	100
K4QES	150	W9QOT	112	Late Reports:	
W8GFE	139	K2WAO	111	K5LZW (Feb.)	151
W3CUL/4	137	K4JOP	111	K4GWO (Feb.)	128
W9UOL	136	K9GNC	111	W1EOW (Feb.)	105
W1YRZ/2	132	KN9MMZ	109		

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
K01DT	325	K3WBJ	201	W9YTT	100
W9QQQ	249	K7WAT	125		

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: K2FCB, K4LVE, K6EWY, W7FRK, W8DJN, W8WGU.

The BPL is open to all amateurs in the United States, Canada, Cuba, and U. S. Possessions who report to this SCM a message total of 500 or more, or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. The notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five

or more ARRL full members of the Section concerned, in good standing, are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested. (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. [place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the
..... ARRL Section of the
Division, hereby nominate
as candidate the Section Communications Manager for this
Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— F. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
Yukon *	June 10, 1958	W. R. Williamson	Mar. 17, 1949
Louisiana	June 10, 1958	Thomas J. Morgavi	May 31, 1958
West Indies	June 10, 1958	William Werner	Aug. 10, 1958
Western New York	June 10, 1958	Charles T. Hansen	Aug. 10, 1958
Kentucky	June 10, 1958	Albert M. Barnes	Aug. 16, 1958
Montana	June 10, 1958	Vernon L. Phillips	Sept. 1, 1958
Western Pennsylvania	June 10, 1958	John F. Wojtkiewicz	Resigned
North Dakota	June 10, 1958	Rev. Casper F. Bonifas	Resigned
Northern New Jersey	July 10, 1958	Lloyd H. Manamon	Sept. 25, 1958
Wyoming	July 10, 1958	James A. Masterson	Resigned
Canal Zone	July 10, 1958	P. A. White	Oct. 1, 1958
Idaho	Aug. 11, 1958	Rev. Francis A. Peterson	Oct. 10, 1958
Vermont	Aug. 11, 1958	Mrs. Ann L. Chandler	Oct. 10, 1958
Nevada	Aug. 11, 1958	Albert R. Chin	Oct. 10, 1958
Santa Clara Valley	Aug. 11, 1958	G. Donald Eberlein	Oct. 15, 1958
Rhode Island	Aug. 11, 1958	Mrs. June R. Burkett	Oct. 15, 1958
Arkansas	Aug. 11, 1958	Ulmon M. Goings	Oct. 15, 1958
New Hampshire	Aug. 11, 1958	John Arthur Knapp	Oct. 26, 1958
Kansas	Aug. 11, 1958	Earl N. Johnston	Oct. 29, 1958

* In Canadian Sections nominating petitions for Section Manager must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

Section	Manager	Term
Alberta	Gordon W. Hollingshead, VE6YM	May 1, 1958
Ontario	Richard W. Roberts, VE3NG	June 15, 1958
In the South Carolina Section of the Roanoke Division, Dr. J. O. Dunlap, W4GQV, and Mr. Bryson L. McGraw, W4HMG, were nominated. Dr. Dunlap received 187 votes and Mr. McGraw received 81 votes. Dr. Dunlap's term of office began March 4, 1958.		

In the Ohio Section of the Great Lakes Division, Mr. Wilson E. Weckel, W8AL, and Mr. Charles C. Miller, W8JSU, were nominated. Mr. Weckel received 765 votes and Mr. Miller received 424 votes. Mr. Weckel's term of office began March 5, 1958.

In the North Carolina Section of the Roanoke Division, Mr. B. Riley Fowler, W4RRH, and Mr. Alfred Beacham Leonard, W4RXG, were nominated. Mr. Fowler received 255 votes and Mr. Leonard received 172 votes. Mr. Fowler's term of office began March 6, 1958.

In the Tennessee Section of the Delta Division, Mr. R. W. Ingraham, W4UJO, and Mr. Harry C. Simpson, W4SCR, were nominated. Mr. Ingraham received 241 votes and Mr. Simpson received 216 votes. Mr. Ingraham's term of office began April 15, 1958.

In the Washington Section of the Northwestern Division, Mr. Robert B. Thurston, W7PGY, and Mr. Howard S. Pyle, W7OFE, were nominated. Mr. Thurston received 343 votes and Mr. Pyle received 292 votes. Mr. Thurston's term of office began April 30, 1958.

A.R.R.L. AFFILIATED CLUB HONOR ROLL

This month we're proud to present the first '58 Honor Roll of those affiliated clubs whose *entire membership* consists of members of the League. Affiliates having 100 per cent ARRL membership are determined by consulting information incorporated in the club's official Annual Reports. An *additional QST* Honor Roll will be published later this year. Clubs reporting the results of ARRL membership drives being conducted currently can then be included. Each club listed below will now receive as a special recognition a 100% ARRL Club certificate. Appropriate for display in the club rooms, this certification makes a permanent record of the high standing and membership record of the society.

Aeronautical Center Amateur Radio Club, Inc., Oklahoma City, Okla.
Amateur Radio Club of Central Missouri, Inc., Sedalia, Mo.
Beacon Radio Amateurs, Philadelphia, Pa.
Birmingham Amateur Radio Club, Inc., Birmingham, Ala.
Central Kansas Radio Club, Inc., Salina, Kans.
Crawford County Amateur Radio Association, Meadville, Pa.
The DX Club, Lansdale, Pa.
Enid Amateur Radio Club, Inc., Enid, Okla.
The Fifty Club of California, Los Angeles, Calif.
Gratiot County Amateur Radio Club, Alma, Mich.
Jacksonville Amateur Radio Society, Jacksonville, Fla.
Kerrville Radio Club, Kerrville, Tex.
Keystone Amateur Radio Club, Springtown, Pa.
Marathon Amateur Radio Club, Marathon, N. Y.
Maui Amateur Radio Club, Kahului, Maui, T. H.
Norfolk County Radio Association, Norwood, Mass.
Northwest St. Louis Amateur Radio Club, Inc., Florissant, Mo.
Orange Amateur Radio Club, Inc., Orange, Tex.
Order of Boiled Owls, Levittown, N. Y.
Pacifico Radio Club, Los Angeles, Calif.
Pickens County Amateur Radio Assn., Inc., Easley, S. C.
Rappahannock Valley Radio Club, Fredericksburg, Va.
The Rending Radio Club, Inc., Reading, Pa.
St. Louis Amateur Radio Club, Inc., St. Louis, Mo.
Sheridan Radio Amateur League, Sheridan, Wyo.
South Bay Amateur Radio Society, Chula Vista, Calif.
South Lyme Beer, Chowder and Propagation Society, South Lyme, Conn.
Southwest Missouri Amateur Radio Club, Inc., Springfield, Mo.
State Line Radio Club of New York and New Jersey, Upper Saddle River, N. J.
Tehama County Radio Club, Red Bluff, Calif.
The Totah Amateur Radio Club, Farmington, N. M.
Windblowers' V.H.F. Society, Saddle Brook, N. J.

CLUB COUNCILS AND FEDERATIONS

Affiliated Council of Amateur Radio Clubs, Ron Mayer, W7NGW, Secy., P.O. Box 1335, Portland 7, Ore.

The Cleveland Area Council of Amateur Radio Clubs, Richard E. Frances, W8SZF, Secy., 1323 Plainfield Rd., Cleveland 21, Ohio.

Federation of Eastern Massachusetts Amateur Radio Associations, Eugene H. Hastings, W1VRK, Secy., 28 Forest Ave., Swampscott, Mass.

Indiana Radio Club Council, Inc., Fred Sawyer, W9FJI, Secy., 526 South Gibson St., Princeton, Ind.

Los Angeles Area Council of Amateur Radio Clubs, Inc., Samuel J. Walker, K6IRY, Secy., 9665 La Alba Drive, Whittier, Calif.

Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids 5, Mich.
Ontario Amateur Radio Federation, Inc., William Choat, VE3CO, Secy., c/o Canadian Westinghouse Co., Ltd., 195 Front St., Toronto, Ont., Canada.

San Diego Council of Amateur Radio Organizations, Nick J. Callas, K6DBJ, Secy., 4518 Kamloop Ave., San Diego 17, Calif.

FEBRUARY FREQUENCY MEASURING TEST RESULTS

The FMT of February 14, open to ARRL Official Observers and other amateurs alike, brought entries from 238 participants who made a total of 939 measurements; 127 entries came from OOs and 111 from non-Observers. Everyone taking part has already received an individual report comparing the accuracy of his measurements of the special WIAW transmissions with those of a professional frequency-measuring laboratory.

The standings of the leaders are given below. Decimal fractions are shown only to establish an order of listing, because the official readings can be accredited only to 0.4 parts per million. Sharing top honors equally, therefore, are W1WV, W8UCJ, W4JUI, W2AIQ, W8HB, W0IF and W5NKH.

Observers	Parts/ Million	Non- Observers	Parts/ Million
W1WV.....	0.1	W8HB.....	0.1
W8UCJ.....	0.1	W0IF.....	0.2
W4JUI.....	0.2	W5NKH.....	0.3
W2AIQ.....	0.3	W0WKO.....	0.6
W1MUN.....	0.5	W8GQ.....	0.7
W2FE.....	0.6	K2BZD.....	1.0
W9TZN.....	1.0	W6AXV.....	1.0
W4CVO.....	1.3	W1WPG.....	1.3
W8GBF.....	1.7	W8DD.....	1.5
VE6HM.....	2.3	W1LER.....	2.8
W2GOK.....	3.2	W8KFS.....	4.1
W6GQA.....	3.5	K6HI.....	4.2
W1RLQ.....	4.0	W8TZZ.....	4.3
W0IWE.....	4.2	W3QVT.....	5.1
W9PBI.....	4.4	W9OUT.....	5.4

The following ratings are based on a single measurement:
OO — W7PQJ 0.1. Non-OO — K6RTD 0.1.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from WIAW will be made on June 23 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 1820, 3555, 7080, 14,100, 21,010, 28,060, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on June 4 at 2100 PDST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from WIAW each evening at 2130 EDST. Approximately 10 minutes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with WIAW.

Date Subject of Practice Text from April QST
June 3: *Checking Transistors*, p. 20
June 6: *A Half-Size Ground-Plane . . .*, p. 28
June 9: *A 50-Mc. Station for the Beginner*, p. 30
June 12: *Optimum Stacking Spacings . . .*, p. 40

June 17: Minitrack Station . . . p. 48

June 30: NSB, p. 50

June 25: Simulated Emergency Test—1957, p. 52

June 26: 11th V.H.F. Sweepstakes Results, p. 65

DXCC NOTES

In view of the recent Federation of British Territories in the Caribbean, and the desire to update the Countries List and bring it into line with the published criteria, the following changes to the ARRL Countries List are herewith announced. These changes will be effective as of June 1, 1958.

VP2... Anguilla
VP2... Antigua, Barbuda
VP2... British Virgin Islands
VP2... Dominica
VP2... Grenada & Dependencies
VP2... Montserrat
VP2... St. Kitts, Nevis
VP2... St. Lucia
VP2... St. Vincent & Dependencies
VP5... Jamaica (including Caymans)

All contacts with stations in the Caribbean prior to

June 1, 1958 will be credited on the basis of the ARRL Countries List in effect prior to June 1, 1958.

Contacts made with stations in what was previously listed as Leewards and Windwards will be credited on the following basis. If credit has already been given for a station in the Leewards, further credit cannot be given for that particular island. For example, if Leewards credit was obtained with VP2MY in Montserrat, no further credit can be claimed for Montserrat. A credit given for VP2LU on St. Lucia toward Windwards will count as St. Lucia and no further credit can be claimed for St. Lucia. On the other hand, a contact with VP2KM made on June 1, 1958, or after, can be claimed as credit for St. Kitts or a contact with VP2GC made on June 1, 1958, or after, can be claimed as credit for Grenada.

Contacts made with Caymans prior to June 1, 1958 will continue to be credited as separate from Jamaica. Contacts made with Caymans June 1, 1958 and later will count the same as Jamaica.

DO NOT submit confirmations for these changes before August 1, 1958. Confirmations received for credit with respect to these changes before August 1, 1958 will be returned without credit.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM...278 W8BHA...272 W6DZZ...269
W8HGW...276 W6ENV...272 W5ASG...269
W1FH...276 W8NBK...271 G2PL...269
W9NDA...276 W68YQ...271 W6HW...269
KV4AA...276 W6MX...270 W2HUQ...268
W3GHD...273 W3JNN...270 W6CUQ...268
PY2CK...273 ZL2GX...270 W9RBI...268
W2AGW...272 W8JIN...268

Radiotelephone

PY2CK...271 W8HGW...261 W8DF...253
VQ4ERL...264 Z86RW...260 W9NDA...252
W1FH...262 CN8MM...255 W3JNN...252
W8GZ...261 W9RBI...254 W6AM...250

From March 1, to April 1, 1958 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

W6VSS...232 F9EP...106 K4CFB...101
W9HFB...188 G3HLY...105 K4JVE...101
VE7JB...173 OH8PB...105 W6QWY...101
W3JZY...163 W7LIO...104 W1LVQ...100
OZ5OK...138 W9MLY...104 W3VQZ...100
OH8RS...135 G2RF...104 W6CMR...100
OH8RC...134 G3HJZ...104 K4LNM...100
W1VAN...123 SM2ALU...104 K5CAO...100
W1UWB...121 W98NL...103 W6KXG...100
KH6RR...114 DL3ZF...103 K6PDI...100
W9MJJ...113 OK1LM...103 K9DNE...100
W4BBR...111 OK1VA...103 W9IWX...100
W5AUJ...110 W8KBT...102 W9LNQ...100
W9WNB...110 W8UUS...102 W8SRZ...100
C8TS...108 SMAAE...102 DL1VY...100
HA5BI...108 W1GPH...101 F3HI...100
W3TBP...107 W1JTD...101 HA5AM...100
G2KU...107 W2BYL...101 OH3SO...100
W7FLD...106 W2LYO...101 Z86DG...100

Radiotelephone

W2PTE...201 Z86NZ...114 W2GNQ...102
CN2AX...175 W7GBY...113 W3ADZ...102
W9RBI...153 K2IGO...112 W9BAE...102
F3DJ...153 W1AUF...108 W9BUJ...102
W6VSS...133 W9PQA...108 CN2AK...102
VR2BC...121 W8MFJ...107 W2TIC...102
VY5AD...121 PY4AP...107 OZ2FE...102
W5HWX...120 ZL2ANZ...106 WAKFE...101
JA6HK...118 W8GNY...105 W1KTY...100
W3JZY...117 W8GNZ...105 W2RTY...100
W8KOE...114 DJ2VY...105 W4UWC...100
CN1AK...114 W9AWK...104 W8EHN...100
DL7AA...114 W6NGA...103 W8TOZ...100
OH3PB...103

ENDORSEMENTS

W9YFV...267 DL7AA...240 W6CAE...214
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SCM AREC ORS CP SEC OBS TCC OO
Station Activities
 OBS AIOPR EC DXCC CLUBS RM OPS RCC

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—Richard B. Mesirov, WJNQ-SEC; DVB, RM; PDJ, PAM; TEJ. The PFM meets on 3850 kc. at 1900 Mon. through Fri. The E. Pa. C.W. Net meets on 3610 kc. at 1830 Mon. through Fri. New appointments: PDJ as RM. (YAZ retired because of impending school-teaching and/or Army.) Appointments: WKX, DJW and CMN as OBSs, EPL as Columbia County EC, BUR as Bucks County EC. I am sure the rest of the gang join the SCM in wishing YAZ the best after his FB stint as RM. BES reported that when he attempted to lower his 80-meter wire recently, the weight was so great that it lifted him off the ground. New officers of the Lancaster RTS are JYL, pres.; KFI, vice-pres.; OY, secy.; HXY, treas.; RLT and K3BLC, directors; KAQ, publicity. CMN received his WAS certificate. WHK has a new 885, Z XV has a new four-element 200-meter beam. IMN received W-Del. certificate No. 100. NF reports that the Delaware-Lehigh ARC had a good meeting, complete with an FCC inspector. GYP is on 7 Mc. only because of receiver troubles, but has worked some new DX anyway. CUL played it smart and left for sunny Florida during the snow. New officers of the Abington ARC (Clarks Summit) are CWW, pres.; QDW, vice-pres.; HNK, secy.-treas. BNRs operating time is cut down by night work. KN3ASH and KN3BKT took the General Class exam on the same day and passed. KN3DJU gets on the air with a bang, using an NC-390 and a Ranger. FCI broke away from traffic, working DX for the first time. K3ANS reports that his station is now completely relay operated. New officers of the West Branch ARA are KDK, pres.; RGB, vice-pres.; KNG, secy.; NEY, treas.; HCW, corr. secy. The club, with 32 active members, has completed its club house, has a new HQ-110 and uses the call AVK. ZRQ reports the forming of the Anthracite Wireless Assn. for General Class licenses over 21. To those who missed the first Pa. QSO Party on 3/6—too bad. While the E. Pa. turnout was very small, more than 200 logs have been turned as of this writing. The Harrisburg Radio Amateurs Club issues a Keystone Award for proof of contact with 100 different Pennsylvania amateurs after Jan. 1, 1957. The 100 confirmations and a list should be sent to Awards Manager HQA, Dillsburg, Penna. There is a charge of \$1 to FCC-licensed amateurs, one IRC to others, and postage must be included for return of cards. Write RPG or BQA for details. Traffic: W3CUL 1014, TEJ 257, HNK 124, WHK 121, CMN 54, BFF 50, FCI 50, EPL 40, BUR 36, LHA 27, PDJ 22, AMC 15, NQB 15, NF 14, ZRQ 14, FKE 12, WQL 12, Z XV 9, ADE 4, GYP 4, UIU 3, BNR 1, IMN 1, KFI 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Cronberger, W3UCR—Asst. SCM for Delaware: Ray de Courcelle, 3DQZ. SEC: CXG. Section nets: MDD 3650 M-S 1915 EST; MEPN 3820 MWF 1830, SS 1300 EDT; Del. Emerg. Net 3905 Sat. 1830 EDT. New appointments: CXG as SEC, MCG as RM, OMN, who also is CDRO RACES, as Montgomery Co. EC. Your SCM had the pleasure of being a guest speaker at the AAARC on Mar. 6, and spoke on "Getting Publicity for Your Club." UCR was guest speaker at the Kent Co. ARC on Mar. 11 and spoke on "TVI and TVI Committees." DQZ also was present and both enjoyed meeting with the Kent Co. hams. On Mar. 25 the Frederick Co. amateurs met and adopted their constitution and by-laws and the Frederick Amateur Radio Transmitting Society was born. Officers are WTF, pres.; FRV, vice-pres.; BZT, secy.;

ARA, treas.; DCV, trustee. The WRC had 4XJF at its Mar. 7 meeting and Gay spoke on "Indoor Antennas." The NCVHFS elected KMV, pres.; 4ZBS, vice-pres.; GCO, rec. secy.; and reelected K4SYP (ex-3DWU) secy.-treas. The WMRCs new officers are 4ZLN, pres.; 4YWF, vice-pres.; 1HBH, rec. secy.; IN, corr. secy.-treas.; K3BDE (ex-4LCC) the mgr. The Foundation of Radio Amateur Clubs reelected ECP, pres.; NL, 2nd vice-pres.; 4ZM, secy.; RE, treas. and elected YYB, 1st vice-pres. The RCARAs' officers are MKS, pres.; CKR, sr. vice-pres.; PZZ, jr. vice-pres.; YAG, secy.; FWP, treas. The Antietam RA's new club bulletin is QRV. PZW is on Johnson Is. for 2 years and is /K86 until a call is assigned. Dick is working 20-15- and 10-meter c.w. He schedules WY (his dad) and 3RVI (his brother in Texas). YAG has moved to D. C. and hopes to get on the h.f. bands. IFA is president of the Taft School radio club. ZNK is teaching a class of 14 who are working for their Novice Class licenses at the U.S. Naval Reserve Training Center, Cumberland. Congratulations on a job well done through AREC, RACES, clubs and individual amateurs in the March Snow Emergency. TN has qualified for a BPL medal with his third BPL. UE made BPL for the 2nd month running. K3BCG has a new three-element beam on 15 meters. BCB and 4EKO/3 are taking 2 meters seriously and have built a 5-over-3 besides a 5-over-5 at Fred's home. Paul is now mobile with a Communicator and is building antennas for the Havre de Grace address. EQK has received the 130 stamp for DXCC. K3ANE now is General Class and is working phone and DX. CDQ was active in the YLQOM Contest. WLO was elected director of the Del. Emerg. Net; the other directors are KI and JDP. Ex-AMG, formerly of Arlington, Va., now is at Laurel, Md. 5LGI/3 now is stationed at the Aberdeen Proving Ground. From all reports the Delaware QSO Party was a huge success. The following have received their calls as a result of the KCARC classes: KN3DIL, DIP, DIQ and DIR. It has been noted that DIP, DIQ and DIR are all at the same QTH, where an NC-300 and a Globe Chief is employed. KN3CRG is on the 7-Mc. Novice band midnight to 6 a.m. Sat. and Sun. is glad to QSO any who need Delaware. CUL July 13 at the MEPN Picnic, Braddock Heights Park, and Aug. 15-17, at the ARRL National Convention in Washington. CU Field Day on 75 meters from RCN/AT Traffic: (Mar.) W3UE 584, K3WBJ 288, W3WQ 257, NNM 147, TN 132, HIZ 94, PQ 93, AHQ 70, EKO 67, COK 50, HUD 37, UCR 19, EQK 14, WSE 8, BKE 5, BWT 6, OYX 6, AKB 4, FNM 4, CN 3, HKS 2, WTF 2. (Feb.) W3WV 114, COK 51.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW, PAM; ZI. Appointments: HDW as RM; K2HHJ as OPS and K2SOW as OBS. RG has QSYed to 21 Mc. with his transistor rig with an input of 148 MW. K2CPR has reached the 229 mark in countries worked. FYS is attending Bucknell U. Look for NJN on 3695 kc. every night. The SJRA again topped all others in the recent V.H.F. Contest. K2HOD is contest chairman. Burlington County C.D. Headquarters is now licensed as K2QGE. BZJ reports increased efficiency at State Hq. with new equipment and more operators. The NJN held 26 sessions this month and handled 283 messages. The Burlington Short Wave Radio Club elected K2PPT, pres.; K2SQS, vice-pres.; K2QJL, secy.-treas. DVRA officers recently elected are K2AAR, pres.; K2LZA, vice-pres.; BZJ, secy.; JWA, treas. HAZ lost all his antennas in a recent storm. K2MBD, Camden Co. EC, does a fine job in RACES-AREC planning. K2PTJ is issuing many new "Worked 50 SJRA" certificates. The Delaware Twp. High School news and needs are reported by K2ZID. TE has 205 on his DX list. Look for BV on 2 meters every Monday night for Cumberland Co. news. SVV is recovering from a recent operation. Mercer Co. emergency communication, under the direction of HX, did FB in the recent storm. K2IHW supplies the Mercer County news. Register with RACES/AREC and forward monthly activities reports to your SCM. Traffic: W2HDW 318, RG 228, W1YRZ/2 151, K2WAO 113, JGU 91, SOW 74, PPT 71, W2ZI 59, BZJ 41, K2QOS 12, CPR 6, SOX 2.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: PPY. PAMs: LXE, NAI and TEP.
 (Continued on page 114)

RESEARCH AND AMATEUR RADIO

MANY of our amateur radio friends don't realize the wide research and development activities that the Hallicrafters Company has been engaged in for a good number of years. We are not in a position to disclose many of these developments because they have to do with government projects. However, let's consider some of the interesting ones which we can discuss.

OBVIOUSLY, a majority are somewhat removed from immediate application in amateur communications, but their corollary uses soon may be seen. For example, the disposal of heat in electronic gear is always a problem. We currently are manufacturing special liquid cooled heat exchangers which are highly efficient and lightweight. If you would like, those kilowatts that now heat up your shack can be dissipated quite easily by mechanical means.

IT ALSO is interesting to note that Hallicrafters has a specialized antenna design group, equipped with the latest laboratory gear, that devotes all its time to the design and testing of new types of antennas. It is quite conceivable that some day a number of their developments may be instrumental in obtaining better radio transmission, and reception.

ONE of the most intriguing laboratories at Hallicrafters is the complete and separate environmental section where testing of components over long periods of time, at maximum extremes of high acceleration, vibration, temperature changes and humidity is carried out. The information learned here, daily, assures better equipment tomorrow.

ANOTHER fact we think you'll find interesting concerns a series of "black boxes" Hallicrafters is producing. The "outputs" of these boxes can be fed into radar systems to simulate unlimited target or interference conditions. These "simulators" are being widely used today for training radar personnel as well as for testing new and extremely complex electronic devices.

ACCURATE clock time, independent of vertical speed position or altitude, is mandatory under many specialized conditions. Hallicrafters has these clocks in operation, fully transistorized.

AS PREVIOUSLY stated, the direct benefits of these new products to the amateur field may not be apparent at first glance. However, consider the wide experience in engineering and production that our engineers gain in evolving these complex items. The results can be seen best in the transistor techniques of the first fully transistorized, all ham band receiver, with associated S.S.B. transmitter, which Hallicrafters has just recently demonstrated. Only two tubes are in the whole unit. And we can assure you better things are on the horizon.

Peter A. Rieke, K8HHY, of Cincinnati, Ohio was the winner of the Hallicrafters Single Sideband Contest. We are using this opportunity to tell all hams, since a number of recent letters indicates some hams never received this information.

73,
FRITZ FRANKE

Buell Hallicrafters Jr. W9AC for hallicrafters



All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

HEATH *hams work to bring you*



ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY



CHUCK K3CJ

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

\$35⁹⁵



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 50 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 19 lbs.

HEATHKIT "APACHE" HAM TRANSMITTER KIT

- Newly Designed VFO—Provision For S.S.B. Adapter
- Modern Styling—Rotating Slide Rule Dial

MODEL
TX-1

\$229⁵⁰

Shipped motor freight unless
otherwise specified. \$30.00 de-
posit required on C.O.D. orders.

Fresh out of the Heath Company laboratories, the brand-new "Apache" model TX-1 Ham Transmitter features modern styling and is designed as a handsome companion to the also-new Heathkit "Mohawk" receiver. The "Apache" is a high quality transmitter operating with 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, the "Apache" features built-in switch selected circuitry providing for single-sideband transmission through the use of a plug-in external single-sideband adapter. These Heathkit adapters will be available in the near future. A compact, stable and completely redesigned VFO provides low drift frequency control necessary for single-sideband transmission. An easy-to-read slide rule type illuminated rotating VFO dial with vernier tuning provides ample bandspread and precise frequency setting. Simple band-switching control allows flip-of-the-wrist selection of the amateur bands on 80, 40, 20, 15 and 10 meters (11 M with crystal control). The "Apache" features adjustable low level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL-34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation.



The final amplifier is completely enclosed in a perforated aluminum shielding for greater TVI protection and transmitter stability. Cabinet comes completely preassembled with top hatch for convenient access without taking chassis out of cabinet. Die-cast aluminum knobs and front panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. Incorporates all the refinements necessary with many "plus" features for effective and dependable communications. Shpg. Wt. 115 lbs.

...top quality at lowest prices!

HEATHKIT "MOHAWK" HAM RECEIVER KIT

- All Critical Circuits Prewired and Aligned
- Crystal Controlled Oscillators for Drift-Free Reception

MODEL
RX-1

\$274⁹⁵

Shipped motor freight unless
otherwise specified. \$30.00 de-
posit required on C.O.D. orders.

Outstanding results can be expected with the new "Mohawk" receiver which is designed to combine all the necessary functions required in a high quality communications receiver. A perfect companion for the Heathkit "Apache" transmitter, the "Mohawk" features the same wide-band slide rule type vernier tuning and covers all of the amateur bands from 160 through 10 meters on seven bands with an extra band calibrated to cover 6 and 2 meters using a converter. External receiver powered, accommodations are available for these converters which will be available in Heathkits soon. The "Mohawk" is specially designed for single-sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled, wired and aligned front end assures ease of assembly. All critical wiring is done for you insuring top performance. This 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc. Five selectivity positions from 5 kc to 500 CPS. A



bridged T-notch filter is employed for maximum heterodyne rejection. Complete accuracy is obtained with the use of a built-in 100 kc crystal calibrator and the set features 10 db signal-to-noise ratio at less than 1 microvolt input. S-meter and many other fine features built-in for top-notch signal reception. Shpg. Wt. 90 lbs.

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

**BENTON HARBOR 9,
MICH.**

HEATHKIT PHONE & CW TRANSMITTER KIT



MODEL
DX-40

\$64⁹⁵

The DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, control-carrier modulator for phone operation peaks up to 60-watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80-meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so that the buffer stage can be pretuned before the final is switched on. A switch selects any of three crystals, or a jack for external VFO. High quality D'Arsonval meter for tuning. Shpg. Wt. 26 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL
DX-100

\$189⁵⁰

Shipped motor freight unless otherwise specified. \$50.00 deposit required on C.O.D. orders.

You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built-in VFO, built-in modulator, TVI suppression, pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, pi network interstage coupling, and high quality materials throughout. Copper plated 16-gauge steel chassis, ceramic switch contacts, etc., are typical of the kind of parts you get, in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11 and 10 meters with a single band-switch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final amplifier, modulated by a pair of 1625 tubes in parallel. VFO tuning dial and panel meter are both illuminated for easy reading, even under subdued lighting conditions. Attractive front panel and



case styling is completely functional, for operating convenience. Designed exclusively for easy step-by-step assembly. No other transmitter in this power class combines high quality and real economy so effectively. Here is a transmitter that you will be proud to own. Time payments are available Shpg. Wt. 107 lbs.

more fine ham gear from the pioneer



HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designing new coils, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs.

Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC. Shpg. Wt. 1 lb. No. 341-A **\$3.00**

MODEL GS-12

\$21⁹⁵

HEATH COMPANY

A Subsidiary of Daystrom, Inc.



BENTON HARBOR 9,
MICHIGAN

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal $5\frac{1}{4}$ " speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs.

Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. \$4.95

MODEL AR-3

\$29.95



ALL-BAND RECEIVER

HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. Shpg. Wt. 5 lbs.

MODEL VX-1

\$23.95



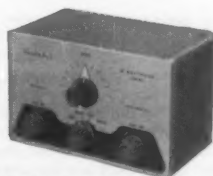
ELECTRONIC VOICE CONTROL

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a heterodyne. Functions with any AM Receiver having an IF frequency between 450 and 480 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1

\$9.95



"Q" MULTIPLIER

NOTE: \$10.65 WHEN ORDERED WITH AR-3 BECAUSE OF EXCISE TAX.

...in do-it-yourself electronics!

HEATHKIT "AUTOMATIC" CONELRAD ALARM KIT

Designed to give instant warning whenever a monitored station goes off the air, the CA-1 automatically cuts the AC power to your transmitter, and lights a red indicator. Works with any radio receiver; AC-DC—transformer operated—battery powered, so long as the receiver has AVC. A manual "reset" button is provided to reactivate the transmitter. Incorporates a heavy-duty 6-ampere relay, a thyratron tube, and its own built-in power supply. A neon lamp shows that the alarm is working. Simple to install and connect with complete instructions provided for assembly and operation. Shpg. Wt. 4 lbs.

MODEL CA-1

\$13.95



"AUTOMATIC" CONELRAD ALARM

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

\$19⁵⁰

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

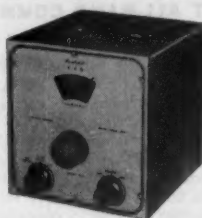
\$15⁹⁵

HEATHKIT BALUN COIL KIT

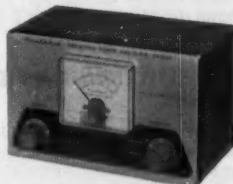
This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1

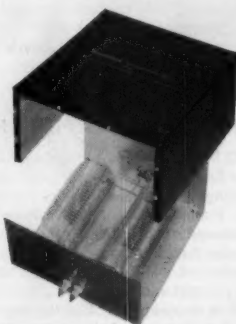
\$8⁹⁵



VARIABLE FREQUENCY OSCILLATOR



REFLECTED POWER METER



BALUN COIL

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**FREE
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Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

☐ Rush Free 1958 catalog.

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a subsidiary of Daystrom, Inc.



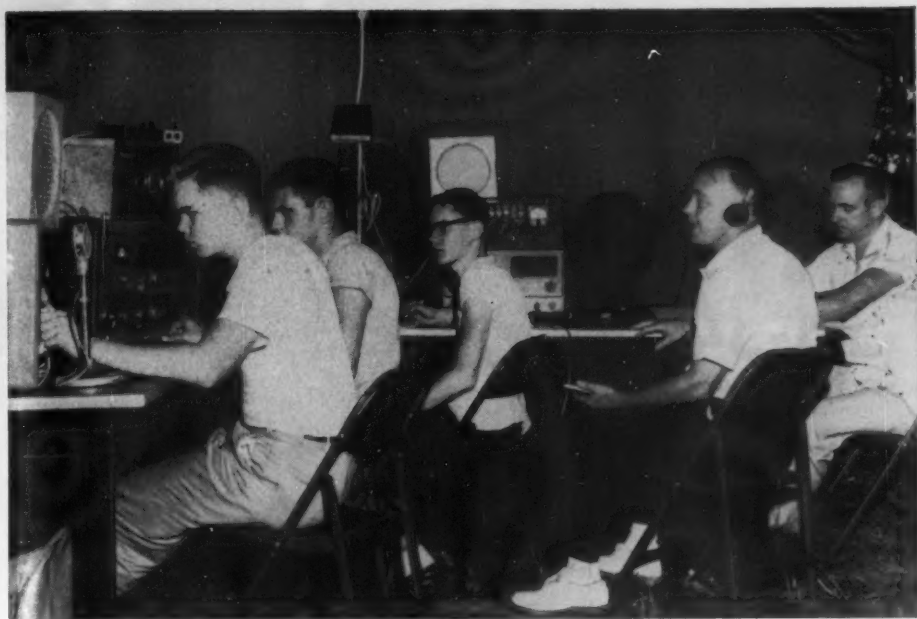
name _____

address _____

city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

\$ _____ enclosed. Parcel post, include postage—express orders are sent shipping charges collect. All prices quoted are Net F.O.B. Benton Harbor, Mich. and apply to Continental U.S. and Possessions only. All prices and specifications subject to change without notice.



Photograph courtesy of the Old Dominion ARC of South Boston, Va.

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A rig's got to work right—whether it's in the shack, on your favorite field-day hilltop, or part of your emergency gear. There is no compromise for dependability.

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Take vibrators, for example—Mallory research and design have produced new vibrator contacts that result in up to 100% longer life, reduced arcing and mechanical noise, and fast starting.

Mallory FP capacitors, for service up to

500 working volts—DC, are the only capacitors to feature etched cathodes and fabricated plates for longer life at rated capacity—even under the toughest conditions. The complete line of Mallory transmitting capacitors, for filter, bypass and coupling service, are standards for design and replacement wherever quality and dependability count.

A Mallory Precision Components Catalog ought to be a permanent part of your reference file. You can get a copy by asking your Mallory Distributor—or by dropping a QSL to the Mallory Hamshack, P. O. Box 1558, Indianapolis 6, Indiana.

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SR-34

two and six meter
transmitter/receiver



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Bill Sulton's Wholesale Electronics

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Busacker Electronic Equipment Co., Inc.

San Antonio: Modern Electronics Company

Victoria: Lavender Radio & TV Supply

VIRGINIA:

Arlington: Key Electronics

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In our 25th year of service

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New!

hallicrafters "2 and 6"



World's first complete two and six meter radio station... features transistorized, built-in power supply

COMPLETE SPECIFICATIONS

General description: The SR-34 is designed for either AM or CW and combines, for the first time in one compact package, the complete functions of a two and six meter radio station. It operates on 115-V. A.C., 6-V. D.C., or 12 V. D.C. and features a highly efficient transistorized power supply for the 6 and 12 volt operation.

Exclusive features: The perfect unit for short-range portable, fixed or mobile communication, the SR-34 meets—and exceeds—F.C.D.A. matching-fund specifications. The crystal sockets and transmitter tuning controls are concealed behind a panel which may be sealed to prevent tampering. Instantaneous selection of desired voltage possible and also "crossbanding" between the two and six meter bands. The specially designed cover has mounting clips for two-band antenna, owner's microphone, and cords.

Both receiver and transmitter may be used for C.W.; key jack and adjustable B.F.O. are provided. Drip-proof case is specially designed for safe outdoor use.

The transmitter is crystal-controlled; up to four crystals may be switch-selected. A fifth position on this switch permits external V.F.O. operation. Band selection also is front-panel controlled.

The receiver is a double conversion superhetero-

dyne, having a quartz crystal controlled second oscillator. This offers outstanding selectivity and high image rejection. Highest stability is obtained through separate oscillator and R.F. sections for each band.

All receiver functions provided—S-meter B.F.O., ANL, etc. Sensitivities average 1 microvolt on both bands. Transistorized power supply eliminates noisy, erratic operation encountered with vibrator-type power supplies.

Front Panel Controls: *Receiver:* Band Selector (49-54 mc., 143.5 to 148.2 mc.); Main Tuning; Sensitivity; Audio Volume; B.F.O. Pitch; Squelch Level; Headphone Jack. *Transmitter:* Function Switch (P.A., Rec., Cal., AM, CW); Power On/Off; Band Switch; Crystal Selector and V.F.O.; Oscillator Tuning; Doubler Tuning; Tripler Tuning; Final Tuning; Final Loading; Meter Switch.

Power output: 6 to 7½ watts on 2 meter, and 7 to 10 watts on 6 meter AM or CW, 100% mod. negative peak clipping. *Rear Apron:* Speech input level control; key jack; P.A. speaker terminals; mic. selector (high Z or carbon); mic. input; A.C. and D.C. fuses; power plug.

Available with convenient terms from your Radio Parts Distributor.

Export Sales: International Operations—Raytheon Manufacturing Co.—Waltham, Massachusetts



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are born at . . .

In our 25th year of service

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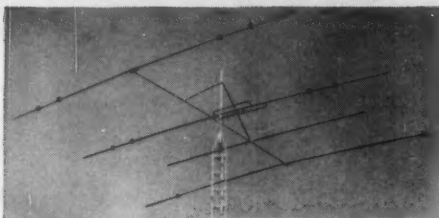
Chicago 24, Illinois

for the final proof of operating excellence . . . compare on the air!

THESE GREAT SERIES OF

Hy-gain trap tribanders

the FULL-SIZE trap tribanders



99⁷⁵

the 3-element trap tribander

The 3-Element Tribander shown above is now considered as the standard of performance in the field of amateur communications. F/B Ratio: approx. 25 db. Forward gain: 8 db. average.

69⁵⁰

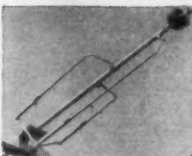
the 2-element trap tribander

For use in limited space when top quality transmission is desired on 10, 15 & 30M. Single transmission line. F/B Ratio: approx. 18 db. Forward gain: 5.8 db. average.

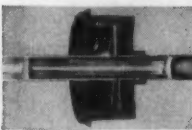
395⁰⁰

the 5-element trap tribander

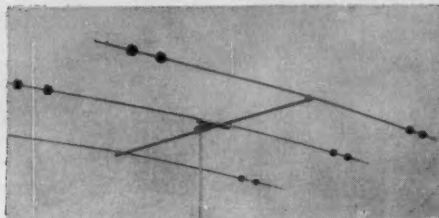
One of the finest, highest gain, rotatable arrays available. Heavy duty construction. U.S. 36", 2x31" rectangular aluminum boom. F/B Ratio: approx. 25 db. Forward gain: 12 db. average.



Perfect 1:1 SWR is made possible by the new, pre-calibrated Triaxial Gamma Match System with coaxially formed reactance cancelling capacitor built in. Exceptional band width maintains low SWR over entire band. Coax connector for 52 ohm feed line included. Gamma rod and capacitor section calibrated for exact setting over each band. No external baluns, antenna tuners or matching networks needed.



The automatic switch action of the Insu-Traps is employed in both series of tribanders. They act as insulators at their resonating frequencies, but allow radio energies of other frequencies to pass, isolating various sections of the antennas. Mechanically and electrically stable, the traps are hermetically sealed at the factory in polyethylene cover and cap, completely weatherproof. Hi-Q coils wound on styron form. Guaranteed for the life of the beam. The Mini-Tribander Traps are specially weight-designed for wind loading efficiency.



the 3-element mini-tribander

Extremely lightweight, only 39.8 lbs. Turning radius: 13'10", installable almost anywhere, yet boasting many features of the full-size line. Hy-gain top quality performance guaranteed.

69⁹⁵

the 2-element mini-tribander

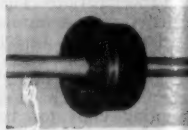
Practically a featherweight: — only 33.8 lbs., easily one-man installed in the shortest possible time and nearly anywhere. Turning radius: 12'11". Top features at minimum cost.

49⁹⁵

Here's the smallest practical size consistent with efficient operation, to which the trap tribanders may be reduced. Install in the smallest city lots. Light weight & rotatable by most TV rotators. Factory pre-tuned, with dimensions given for quick, easy assembly in a matter of minutes.



Split insulated dipole feed with coaxial choke results in SWR of less than 2:1 on all bands. No adjustments needed: simply attach 52 ohm feedline to dipole terminals. Heavy 12 ga. hot dipped galvanized steel channel and polyethylene insulated U-bolts support Hy-gain's driven element. Compare this construction with the flimsy supports using self-tapping metal screws.



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"World's Largest Distributors of Short Wave Receivers."

Compare... on the Air!

the **14-gain**

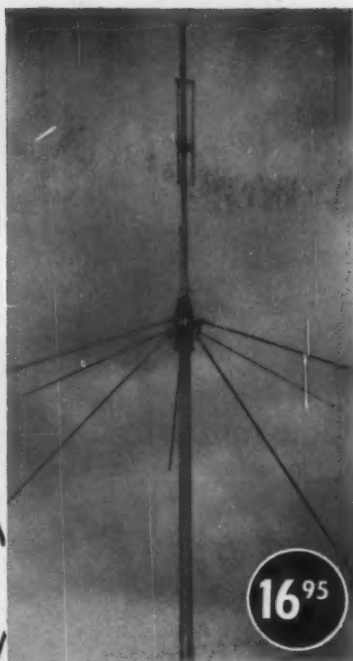
MULTI-BAND TRAP VERTICALS

12-AV (10, 15 & 20 METERS)

For automatic coverage of the 10, 15 and 20 meter bands. Insu-Traps isolate the various sections of this vertical, developing $\frac{1}{4}$ -wave resonance on each band. 52 ohm coaxial feed. Less than 2:1 SWR on all bands. Overall height: 14 ft. No "guesswork" assembly with step-by-step construction manual.

26-AV (2 & 6 METERS)

The Automatic Vertical for the 2 and 6 meter bands, with the new "sleeve decoupling" principle. Complete with ground plane. Overall height of Vertical and length of ground plane: 5 ft. Less than 2:1 SWR both bands. 52 ohm coax feed. Complete instructions.

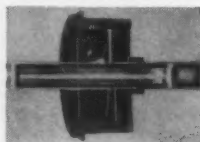


DECOUPLING SLEEVE

Radically new Decoupling Sleeve automatically isolates various sections of the 26-AV, developing $\frac{1}{4}$ -wave resonance on each band. Complete ground plane is also dual resonant for both bands. Totally unaffected by weather; extremely efficient at high frequencies.

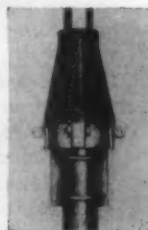
INSU-TRAP

Acting as insulator at resonant frequencies, but allowing radio energies of other frequencies to pass freely. Automatic switch action isolates various sections of the vertical to make them proper length for each band. Mechanically and electrically stable. Entire trap circuit enclosed in carbon activated polyethylene cover and cap. Completely weatherproof, air tight.



BASE

Nylon base assembly makes possible self-support. Cast aluminum mounting bracket and adjustable for various sizes of masts, with weather protected internal coaxial fitting. Electrical connections factory sealed.



COMPLETE LINE

Model 26-AV (2-6M)	.....\$16.95
Model 12-AV (10, 15, 20M)	.....\$19.95
Model 14-AV (10-40M)\$27.95
Model 18-AV (10-80M)\$49.50
12-AV Mount Kit\$ 8.95
14-AV Mount Kit\$ 9.95

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Complete stock of all transmitters, receivers, antennas, rotators, towers, parts, accessories, equipment.

Send for our FREE Catalog!

EASY TERMS

90 days open account or 10% down—up to 20 months. We finance. Payment within 90 days cancels all interest. Write for details.

A-1 RECONDITIONED APPARATUS

Nearly all makes and models—Big Savings—Ten-day trial—90-day warranty. 90-day full trade back on new apparatus. Write for bulletin.

PERSONAL SERVICE FAST DELIVERY

Your inquiries and orders handled same day. Write, phone or wire us.

COMPLETE STOCKS

Henry has everything in the amateur equipment field, new or used...transmitters and receivers.

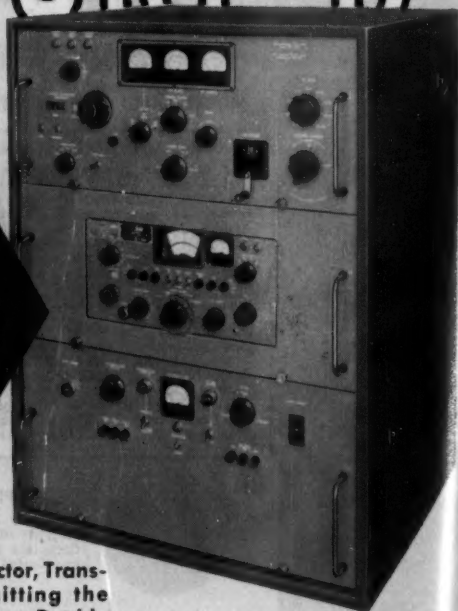
PRICES SUBJECT TO CHANGE



AN/URT-17

MODEL GPT-750(D)

- SINGLE SIDEBAND — SUPPRESSED CARRIER
- INDEPENDENT SIDEBAND — SUPPRESSED CARRIER
- DOUBLE SIDEBAND — FULL CARRIER — SUPPRESSED CARRIER
- FREQUENCY SHIFT
- CW-MCW-AM



TMC

The **TMC** Model SBE-1, Mode Selector, Transmitting, is a universal exciter permitting the transmission of any intelligence on Single or Double Sideband, with or without carrier.

The exciter may be used for simultaneous or independent transmission of intelligence on either upper or lower sideband. For example: A voice channel can be transmitted on the upper sideband while tone multiplex is being transmitted on the lower sideband.

The SBE-1 provides the following commonly known types of operation:

1. Conventional Double Sideband, AM, with the additional advantage of carrier level control.
2. Conventional Single Sideband with adjustable carrier insertion.
3. Conventional Interrupted Carrier, CW, or Sideband Tone CW.
4. Independent Sideband transmission with adjustable carrier insertion.

From the above paragraphs, it should be apparent that the SBE-1 provides transmission which is compatible with any of the current "controversial" systems.

The TMC Model GPT-750, Radio Transmitter provides radio telephone, telegraph, frequency shift and facsimile operation on all frequencies within the range of 2 to 32 Mc.

The GPT-750 is a field proven equipment, service tested, nomenclatured (AN/URT-17) and approved for service use. This transmitter has been used for fixed plant, mobile and shipboard operation and provides 1000 watts output CW and FS, 750 watts output radio telephone (high level modulation) and 750 watts output, PEP, single sideband, all on a continuous commercial service basis. Band switching in all stages.

WRITE FOR
BULLETIN 174C

THE TECHNICAL MATERIEL CORPORATION



PAL-350

LINEAR POWER AMPLIFIER



- 350 Watts 2 tone PEP
- Parallel 4X250B's
- Continuous Commercial Service
- SSB · ISB · DSB · AM · CW · MCW
- 2 to 32 Megacycles
- BANDSWITCHING
- PI-NETWORK 50 to 70 ohm unbal.
- Applicable to Mobile

WRITE FOR
BULLETIN 204

THE TECHNICAL MATERIEL CORPORATION

Put America Back To Work!
10% PRICE SLASH DURING MAY AND JUNE!



"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS

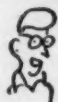
GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in

less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

**DEDUCT 10%
DURING MAY AND JUNE**

I USE MY GOTHAM ALL-BAND VERTICAL ON 6, 10, 15 AND 20



ME TOO, TOM—AND LAST NIGHT I SWITCHED TO 40, 80, AND 160. WORKED SOME REAL DX!



QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminite finish for protection against corrosion. Loading coils made by Barker & Williamson.

ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

EASY ASSEMBLY

Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

SIMPLE INSTALLATION

Goes almost anywhere. On the ground, on the roof, or outside your window.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.



PROVEN DESIGN

Over a thousand Gotham verticals are on the air—working the world and proving the superiority of Gotham design.

AND THE PRICE IS RIGHT!

"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 Kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI

HOW TO ORDER. Send check or money order directly to Gotham or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

WORK THE WORLD



GOTHAM

1805 PURDY AVENUE
MIAMI BEACH 39, FLA.

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

V40 vertical for 40, 20, 15, 10, 6 meters.....\$14.95 ☐
V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....\$16.95 ☐
V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....\$18.95 ☐

Name.....

Address.....

City.....Zone.....State.....

Put America Back To Work!
10% PRICE SLASH DURING MAY AND JUNE!

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!



TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between $\frac{3}{4}$ " and $1\frac{1}{2}$ ".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use $\frac{3}{8}$ " and $\frac{1}{2}$ " tubing elements; the deluxe models for these bands use $\frac{7}{8}$ " and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

TRIBANDER BEAMS

6-10-15 TRIBANDER.....\$39.95
10-15-20 TRIBANDER..... 49.95

Do not confuse these full-size tribander beams with so-called midjets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

TWO BANDER BEAMS

6-10 TWO BANDER.....\$29.95
10-15 TWO BANDER..... 34.95
10-20 TWO BANDER..... 36.95
15-20 TWO BANDER..... 38.95

Each Two Bander has twin 12' booms, and full-size half-wave elements. $\frac{7}{8}$ " and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like W0DEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.

DEDUCT 10%
DURING MAY AND JUNE!

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TWO BANDER BEAMS

6-10 TWO BANDER.....	<input type="checkbox"/>	\$29.95
10-15 TWO BANDER.....	<input type="checkbox"/>	34.95
10-20 TWO BANDER.....	<input type="checkbox"/>	36.95
15-20 TWO BANDER.....	<input type="checkbox"/>	38.95

TRIBANDER

<input type="checkbox"/> 6-10-15	\$39.95	<input type="checkbox"/> 10-15-20	\$49.95
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2 METER BEAMS

<input type="checkbox"/> Deluxe 6-Element	9.95	<input type="checkbox"/> 12-El	16.95
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6 METER BEAMS

<input type="checkbox"/> Std. 3-El Gamma match	12.95	<input type="checkbox"/> T match	14.95
<input type="checkbox"/> Deluxe 3-El Gamma match	21.95	<input type="checkbox"/> T match	24.95
<input type="checkbox"/> Std. 4-El Gamma match	16.95	<input type="checkbox"/> T match	19.95
<input type="checkbox"/> Deluxe 4-El Gamma match	25.95	<input type="checkbox"/> T match	28.95

10 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match	11.95	<input type="checkbox"/> T match	14.95
<input type="checkbox"/> Deluxe 2-El Gamma match	18.95	<input type="checkbox"/> T match	21.95
<input type="checkbox"/> Std. 3-El Gamma match	16.95	<input type="checkbox"/> T match	18.95
<input type="checkbox"/> Deluxe 3-El Gamma match	22.95	<input type="checkbox"/> T match	25.95
<input type="checkbox"/> Std. 4-El Gamma match	21.95	<input type="checkbox"/> T match	24.95
<input type="checkbox"/> Deluxe 4-El Gamma match	27.95	<input type="checkbox"/> T match	30.95

15 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match	19.95	<input type="checkbox"/> T match	22.95
<input type="checkbox"/> Deluxe 2-El Gamma match	29.95	<input type="checkbox"/> T match	32.95
<input type="checkbox"/> Std. 3-El Gamma match	26.95	<input type="checkbox"/> T match	29.95
<input type="checkbox"/> Deluxe 3-El Gamma match	36.95	<input type="checkbox"/> T match	39.95

20 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match	21.95	<input type="checkbox"/> T match	24.95
<input type="checkbox"/> Deluxe 2-El Gamma match	31.95	<input type="checkbox"/> T match	34.95
<input type="checkbox"/> Std. 3-El Gamma match	34.95	<input type="checkbox"/> T match	37.95
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(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

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<input type="checkbox"/> Beam #R15 (15 Meters, 3-El).....	49.95

Name.....

Address.....

City.....Zone.....State.....



Station Activities

(Continued from page 98)

NYS C.W. meets on 3815 kc. at 1800. ESS on 3560 kc. at 1800, NYS Phone on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd Call Area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 kc. at 1600. Congratulations to K2SIL on making BPL for the second month in a row. The Syracuse V.H.F. Club elected K2JIM, pres., K2PKL, vice-pres., EMW, secy.-treas., and RHQ, act. mgr. EMW's DX total now stands at 224. K2AOQ dropped the "N." K2UFB and K2IRT are going mobile. New hams in Clyde are KN2IOY and KN2KKZ. KN2DGU received the Novice award in the V.H.F. Contest. Lynn has worked ten states on 2-meter c.w. using his feet. K2SIL has received an A-1 Operator Award. ATC and EUP are making test runs on their equipment for Field Day. The SWNYHFA has been donated space for meeting in the basement of the Machias town hall. There also is a spot for a 6-meter antenna 80 feet up. The RAWNYY Board of Directors elected TKO, pres.; CUU, vice-pres.; K2KYT, corr. secy.; PPY, rec. secy., and K2GBY, treas. PFI has a new HT-32. K2UFB is building an 813 d.s.b. rig. K2CEH is remodeling his shack. K2PVK and K2TYG are active on 6 meters. K2IXB has 200 watts on 6 meters and a converter for 220 as well as for 420 Mc. YVI has worked Africa and South America on 6 meters. The Niagara Frontier DX Assn. has obtained its own distinctive QSL cards. K2CZO, K2MBJ, PPY, GBX, VRG and K2CLF organized a 2-meter mobile net for the Nephrosis Charity Drive and collected several thousand dollars in the Buffalo area. LXK expects to have a kilowatt on 2 meters by the time you read this. K2HUK now has 60 countries on s.s.b. Appointments are contingent upon regular reporting on a monthly basis to the SCM. Your SCM would like to be on the mailing list for club meetings and special events. K2ERP, the club station at the Kenmore HSRC, has been appointed OBS. K2KIR has been renewed as OO. Traffic: K2SIL 708, IYP 436, KIR 305, W2RUF 246, K2RYH 233, W2ZRC 148, K2UZZ 99, RTN 79, JBX 69, GQU 58, LGJ 55, W2BKC 37, FEB 44, K2BBJ 34, YJN 26, W2OE 25, K2TKT 23, KQC 22, W2RQF 21, K2GKK 19, HUK 16, UNZ 14, RIT 2, DEM/2 1, W2EMW 1, K2RHQ 1.

WESTERN PENNSYLVANIA—Acting SCM, Anthony J. Mrocska, W3UHN—SEC: OMA. RMs: GEG and NUG. PAMs: AER and TOC. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. A new OBS appointee is SIR. Congratulations to HXF on receiving a WAC certificate for two-way s.s.b. ZHQ has worked his 100th country and now is awaiting confirmations. The Coke Center RC, NAV, now is on 10 and 160 meters. QVV is transmitting good quality TV to MQT, a distance of 11 miles. New officers of the Conemaugh Valley ARC are BST, pres.; SNN, vice-pres.; IWT, secy.; BLR, treas.; UIY and TIF, trustees. WRC, MIM and UIY are using Wonder Bar antennas on 10 meters. JJA has a Valiant. LXQ and WRE are sharing c.w. training sessions on c.d. drills. KBARV has a new HQ-100. TOC is having v.f.o. trouble. Up Erie way: LOS worked UPOLE, a Russian located on a floating ice base near the North Pole. The RAE boys had Mr. Schlaudecker, of Bliley Crystals, as guest speaker. The Washington County ARC had Director YA as a guest at the April meeting. PBN now is working s.s.b. LOD is relaying emergency traffic for K4IES. GJY is convalescing slowly. LXU, LXQ, YCG, BZR and K2AGF are doing swell jobs on the WPA Traffic Net. The Uniontown ARC, PIE, will hold its annual stage-fest June 21. Traffic: (Mar.) W3WQ 1020, LXU 288, BZR 147, K3AGF 61, W1SSS 60, UHN 47, YCG 24, LOD 6, WRE 6, KN3CCZ 2, W3GJY 2, TOC 2. (Feb.) W3YCG 25, KNQ 9.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond Metzger, W9PRN—Asst. SCM: Grace V. Ryden, GME. SEC: HOA. Cook County EC: HPG. RM: MAK. PAM: RYU. Section net: ILN meets Mon. through Sat. on 3515 kc. at 7 p.m. Congratulations to the new Southern Illinois Weather Net under the helm of RNM and BJE. The Easter Saturday twister could have been more disastrous if this net had not been organized. EX-DL400 is now K9HGP. K9CAZ is mobiling with a DX-100 with a 600-watt generator mounted in the trunk. RYU reports that the Quad City gang helped the local police in the routing of a 30-mile-long parade by mobiling AKE, UCZ, DGV, K9AKS, K9EUF, K9CHZ, K9IDN and K9HCW on 6-meter Gonset Communicators. He also writes that UCZ is net control for the Rock Island RACES. JMF worked 21DZ/VES on 6 meters located

at Cape Pany on the Amundsen Gulf, which is north of the Arctic Circle. BON's new rig has passed the test and is active on 30 Mc. K9BAU, assisted by YEU and LTI, gave a lecture demonstration to the Galesburg Jr. Chamber of Commerce with a link to K9BEI, who used 20-meter s.s.b. to work Texas. K9EGJ, president, and K9GDQ, trustee, are officers of the new Von Steuben High School (Chicago) Radio Club. The Chicago V.H.F. Club and the YLRL held a joint meeting on May 13. New Novices heard were K9LRLJ and K9LIW. IDA is busy making plans to visit his son, CXT, at Monterey, Calif. 5ZWR/9 is now located permanently in Joliet. DSO, chief of the 9 QSL Bureau, wants to remind the gang to please send in addressed envelopes as there are many cards on file but no envelopes in which to forward them. The Peoria Area Amateur Radio Club's membership drive now totals 102 and K9IUI reports that they will go over the 150-member goal soon. BON is now celebrating his 28th year of amateur radio with the same call. CSW reports that the North Central Phone Net handled traffic with a total of 514. MAK also reports that the ILN handled 400 messages in 31 sessions during March. IJEQ, ARRL Headquarters Technical Assistant, spoke before the Chicagoland Mobile Radio Club on Apr. 25. LDU has been appointed new Assistant Manager of the IEN. JVD is back again pounding brass after a two-week hospital vacation. The Y-Rad Club of Sterling passed K9LAC, K9KZK, K9NLAB and K9LAA during its recent code class. Many items were received regarding the Annual Field Day Event. Some have very elaborate plans, but the main idea is to get out and use that emergency equipment. Mr. Raredon and Mr. Stanton, of the State Civil Defense, met with the St. Clair County Control Center at Belleville with EC's and Radio Officers from nearby counties attending. K9JLD and his Regional Novice Net have increased the roster of members by a large percentage since it inaugurated. Traffic: (Mar.) WBDQ 1376, WBE 347, PCQ 233, FAW 142, IDA 108, K9AXL 73, JIN 69, GDQ 59, WPCSW 55, CTD 51, BUK 40, PHE 21, RYL 21, YFO 16, K9JLD 14, W5WZR/9 8, W9SKR 4, JZK 3, SXL 2, TZN 2, BON 1, (Feb.) W9IDA 144, BON 1, (Nov.) W9JSH 40.

INDIANA—SCM, Arthur G. Evans, W9TQC—Traffic nets: IFN, 3910 kc., 0800 Dy. and 1800 Mon. through Fri.; QIN, 3656 kc., 1900 Dy.; RFN, 3656 kc., 0900 Sun. BDG is now OPS and ORS. Other OPS are K9BFX, ENU, K9GBB, MLF and TQX. CWG is a new OES. New officers of the Key and Mike ARC at New Albany are HEL, pres.; UVD, vice-pres.; K9GCE, secy.-treas.; Bill Houghton, Pub. The IRCC Hamfest will be held at the Tippecanoe County Fair Grounds July 20. Pre-registration is \$1.25. Mail to Betty Timberlake, LYU, 1915 Central Street, Lafayette. New General Class calls are LYU and KHYY at Michigan City. KSP at Indianapolis and LJE at Groversville. IJB made WAS on 40 and 15 meters while a Novice. K9AYI is justifiably proud of a 30-w.p.m. Code Proficiency sticker. New at Cambridge is K9EYO, a former W6. DGA is coordinating the various emergency communications systems of RACES, AREC and the clubs in the Evansville Area. EIC is working on a d.s.b. rig. K9EOH is building a 5894 rig for 420 Mc. K9CFG received signals from 35 miles away on a transistor 6-meter receiver. FGX received a DXCC certificate. K9AQP is building a 500-watt c.w. rig for 2 meters. MLF has a new HQ-110 and is building a rig for 6 meters. MHP is on 220 Mc. with modulated oscillator. CC operated 4 at Ft. Meyers, Fla., for two months. SWD reports IFN morning traffic as 243, evening 224, for a total of 467. JOZ reports a count of 235 for QIN. RFN traffic as reported by TT was 92. EH2 reports traffic as 44 for CAEN. The Indianapolis ARC is sponsoring the publication of a Ham Radio County Ham Directory, edited by TCH and published by K9EUF. Traffic: (Mar.) W9NZZ 966, JOZ 681, TT 292, VAY 220, BDG 213, ETM 173, EH2 105, TQC 105, K9AYI 92, W9ENU 82, RTH 76, GJS 71, SWD 65, K9HMM 62, W9DOK 56, DGA 58, UQP 50, HUF 44, K9GBB 40, W9WHL 36, BUQ 33, HXR 34, VNV 33, K9EOI 29, W9UMS/9 29, BHR 28, BRW 26, K9EOJ 26, W9IMU 26, CC 23, K9EOH 22, W9HRW 23, EGQ 20, EGV 20, SVZ 20, SNQ 19, WID 13, QR 17, VYX 17, WAU 15, MLF 14, PQZ 14, QVQ 12, EJW 11, NTA 9, NTL 9, K9AOM 8, DWK 8, W9MMV 7, CPZ 6, NH 6, CDQ 3, K9HDY 5, W9AMW 4, K9GSV 4, W9LYU 4, K9NIXD 3, K9AUE 1, (Feb.) W9SVL 50, QYQ 10, WTY 14, K9EOH 8, W9PQZ 7.

WISCONSIN—SCM, George Wolda, W9KQB—SEC: YQH. PAMs: NRP and AJU. RMs: K9AEQ and W9FFC. New appointees: K9ELT as OO Class III and IV, UTU as OO Class III and IV; MWQ and CBE as ORS; FFC as RM; K9GAJ as OES; BEW and

(Continued on page 116)

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RHS as ECs. RQM has a new TVI-proofed kw. final with 304TLs and is up to 189 countries worked. The v.h.f. group in Green Bay is very active. LYX worked Milwaukee on 2 meters with a Gonset and a five-element beam. IMQ has a new 6N2. The Wisconsin Slow-speed Net now is in operation on 3620 kc. at 1830 CST Mon. through Fri. Credit goes to SAA and FFC for its start and good attendance. K9CEF, our 3950-kc. OBS, made WAS. GIL was tops in the DX Tests among the MRAC members, both phone and c.w. QYW made 76,593 points in the DX Tests and rebuilt the final during the contest. DYG made over 1700 points in the YL/OM Contest. OMZ and WZL were the Milwaukee YLs active during the Tests. K9GYG has his Wonder Bar beam on a 50-ft. tower at his Camp Wild Rose home. CCO is now in VK-Land with the Navy. The Mancorad Club has started its summer activities with a banquet, auction and 10-meter transmitter hunt. ZJW has a 1st-class commercial phone license now. K9BRJ, U. of W.'s only YL operator, had 114 phone contacts during the YL/OM Test. ZQA has his WAC. YT is 103 for DXCC in 6½ months. KXK has a new 73A-4 and his WAZ with a JTAA contact. There is high activity in the Blackhawk Club of Janesville. DTM worked VP7-Land on 160 meter c.w. K9LMX is active on WIN. 8RMF/9. MARS operator at Triax Field, is busy on the c.w. traffic nets. K9GAJ, IQO, IKM, W9GFL and LST are very active OESs. OTL/9 is demonstrating at the local schools. Traffic: (Mar.) W9CXY 1157, K9GDF 291, ELT 179, AEQ 138, W9YT 112, SAA 98, K0DTK 82, W9FFC 82, DYG 58, KQB 82, NRP 28, K9GYG 36, W9GFL 20, CBE 19, OTL 17, ERW 16, K9LMX 14, W9SIZ 14, W9RMF/9 13, W9MWQ 6, K9CEF 5, IQO 2. (Feb.) W9YT 36, PJT 10.

DAKOTA DIVISION

NORTH DAKOTA—Acting SCM, Arnold L. Oehl-sen, W8YCL—We are sorry to report that our recently-elected SCM, Rev. C. Bonifas, UBG, has been called to serve his church at St. Charles Seminary, Carthagen, Ohio. We wish "Butch" all the luck in the world at his new QTH. KLP is a new AM. K9CCA is a new net control on the 75-Meter Phone Net. The North Dakota C.W. Net has discontinued activities for the summer. A new amateur at Devils Lake is David Thompson, KN8OBO. Dave is the only North Dakotan to win honorable mention in this year's Westinghouse Search For Talent. UBH has a new 20A and is building a linear amplifier. The boys around Sharon, N. D., are planning a hamfest to be held at Red Willow Lake on June 15. Traffic: K9GGL 23, W9JBM 10, YCL 4.

SOUTH DAKOTA—SCM, Les Price, W8FLP—Asst. SCM: Gerald F. Lee, 8YKY. SCM assistants: FKE and NEO. SECs: YOB and GOE. PAM: SCT. PAM for 2 meters: RSP, RM; GWS. The S.D. 75-Meter (evening) Phone Net had 36 sessions (ZLX 6, SCT 17, CTZ 3, GQH 1, GWA 3, EXX 6); 35 sessions reported. QNI 1045, high 44, low 16, average 29.837; traffic 73, high 8, low 6, average 2.085; informals 109, high 8, low 6, average 3.114. The S.D. 40-Meter Phone Net had 25 sessions (EXX 3, K6INZ 2, LXP 2, NNX 6, K0DPD 6, SCT 1, K0APZ 4); QNI 496, high 24, low 14, average 19.84; traffic 89, high 9, low 6, average 3.56; informals 59, high 7, low 6, average 2.36. The 75-Meter S.S.B. Net (FKE and NEO as NCs) had 31 sessions: QNI 541, high 31, low 11, average 17.3; OTC 34, high 5, low 6, average 17. The S.D. 75-Meter WX Net (ZWL and UAS as NCs) had 26 sessions: QNI 465, high 23, low 14, average 17.8; OTC 471, high 22, low 13, average 18. W8SVI/K0ARF have a new SX-101. Martha reports that the Weather Net helps the Weather Bureau with their forecasts. The XYL Club of Rapid City met with Doris Narum, the XYL of OSQ, on Mar. 20. K0AZD is in the army. Traffic: W8ZWL 619, SCT 360, BMQ 182, DVB 32, NEO 48, CTZ 26, EXX 26, K0HSW 28, W8BQR 24, AZJ 22, FLP 20, FJZ 16, K0ATZ 11, W8ZLB 10, DKJ 9, DIV 8, K0CMX 6, KXR 6, W0NNX 5, TKU 4, KCZ 3, K0MEH 3, W0NIK 3, K0IAW 2, KLR 2, LXH 1.

MINNESOTA—SCM, Robert M. Nelson, W0KLG—SEC: WYO. The prize winners in the March Minnesota QSO Party were K0IDV in the under-150-watt class, OPX in the over-150-watt class and VOA/mobile in the emergency power class. HRY and WXJ, both of Duluth, made DXCC on phone. An ARCC-civil defense demonstration was given by the Triangle Radio Club (Mound) at a local hobby show, at which the club's 6-meter mobilers proved their readiness for emergencies. New officers of the St. Paul Mobile Radio Club are K0CAE, pres.; FGN, 1st vice-pres.; K0AXA, 2nd vice-pres.; K0HCD, secy.; and K0HUA, treas. KN8OMQ is a new brasspounder at Worthington. K0HJC is on phone with 28 watts. RGR has left for service with the Army. We are glad to hear that PBY is home after a session in the hospital. K0ERO is "shopping around" for a kw. rig, after selling his

(Continued on page 118)

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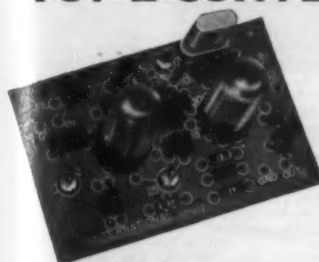
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DX-100. K6DIA, net manager, wants more Novices to join MJN, which meets Mon., Wed. and Fri. at 1700 local time, with NCS on 3690 kc. K6IDV is now an NCS on MJN. YPN has a 20-meter beam up using the new CDR Ham-M Rotor. GQU has a Wonder Bar antenna. The former MVH is operating KZ5IF, Canal Zone, on 20 meters. K8GCN made BPL and also has received his tenth Regional Net certificate. SFU has received the DXCC Award. The Mankato Area Radio Club re-elected RAK as president. New officers are TZB, vice-pres.; and RNY, secy. Remember, most Minnesota Nets have changed to Daylight Saving Time. Traffic: (Mar.) K8GCN 321, W8KLQ 197, W8SHP/8 109, W8KJZ 86, K6IDV 75, W8RQJ 72, QDL 59, K8GVX 48, W8WMA 38, K8DIA 30, W8ALW 23, TCK 23, UMX 33, QVR 22, K8EPT 20, W8WJK 20, WCD 20, OJG 19, LST 18, OPX 17, DQL 14, MBD 12, BUC 11, KN8YK 11, W8OET 11, QDZ 11, K8AEE 5, KEJ 7, W8VBD 7, KN8MIJ 6, W8UCV 5, IRI 4, NVW 4, FGP 3, K8ISV 3, JCF 2, JNX 2, K8LBA 2, ORK 2, K8GKI 1. (Feb.) W8PBI 6.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, WSZZY—SEC: K5CIR, PAM: DYL, RM: SZJ. We are glad to have BYJ back in the State. SZJ has been appointed RM to replace CAF, who has resigned. We want to encourage all of the c.w. operators to give Bill the best in participation and let's keep the traffic moving in Arkansas. K5MDZ is the owner of a brand-new General Class license. VQD now has a rig on 2 meters. The Jonesboro Club has 6 stations on 6 meters and has an active net on Sun. WSM has received his WAC certificate. A new Novice in Russellville is KN5PMB. KN5LNN is now General Class. KRO has a new 4-1000 rig. The club in Pine Bluff gained 5 new members in March but lost K5AC and CW, who have moved away. Our hats are off to the Pine Bluff Club for the interest shown in the Boy Scouts of that area. The Club in Walnut Ridge recently held its Dinner Social with a good turnout. The club reports one new Novice, KN5MIA. K5BGE has moved from Clarksville to West Plains, Mo. We are glad to see the increasing interest in the local nets. Traffic: WSZZY 105, BYJ 56, K5IPS 27, W5WZN/5 24, CEU 17, WSM 14, K5HSO 8, W5ENP 4, K5KAC 4, W5DYL 2.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO —GIZ's auto license plate will be displayed at the Brussels International Exposition this summer. K5LKC, active in the Mississippi and Magnolia Emergency Nets and the Texas YL Roundup, is running a Command ARC/5. K5BLC should be on 420 Mc. now with 10 watts. The Central Louisiana Amateur Radio Club, sparked by K5EFS, has been reorganized. Officers are K5ISY, pres.; GKT, vice-pres.; K5EFS, secy.-treas.; K5BLO/5 net, mgr. A club station has been set up at the Menard Memorial High School. The group will hold a hamfest on Aug. 31. Prizes will include a 10-H exciter. An informal gathering was held at Natchitoches recently. Among those attending were K5HFI, at whose home the meeting was held, K5LND, KN5PGW, VSM/DOR, DDR, SRM, TUZ, YNG, FMO, GNN, a visiting fireman who overheard some ham talk in the local hotel about a ham meeting, K5LXI, Dallas, Tex., and two unlicensed but willing prospects. The Lafayette Amateur Radio Club's new officers are VAQ, pres.; K5DPH, treas.; Don White, secy. CWC is operating 11-meter mobile. MXQ, who reports into RN5, MARS, LAN and CAN, says that the Louisiana C.W. Net is improving with new stations and sections of the State reporting in. The net operates at speeds of 5-25 w.p.m. K5AGJ sends the ARRL Official Bulletins prior to the net roll call on 3615 kc. at 6.15 p.m. each day. K5DMA joined the ranks of grandfathers. Traffic: W5CEZ 281, MXQ 100, NDV 68, K5DMA 15, W5CWC 12.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5EHH—DWY reports a recent informal meeting and party at his QTH of v.h.f. operators from six mid-south cities—RCI, LPG, BSE, VQD, K5AEH, K5BIO and K5CPS to compare notes and tape recordings of Satellites Sputnik and Vanguard. All are members of the International Geophysical Year. K5MOP, Jessie James, is the new voice of N.E. Miss. K5DXL is working 75-, 15- and 10-meter phone and says his bow-tie antenna is doing a fine job on 10 meters. FPI wishes you Mississippi operators would check with him on the Gulf Coast Hurricane Net any evening and help in getting a Mississippi c.w. net going. Sgt. Geo. Paynter, GUU, and 8CYX/5 were visitors at the last meeting of the Cleveland Amateur Radio Club. Sgt. Paynter gave a talk on AF MARS and signed up several new members. The MME Net has 55 active members; 60 pieces of formal traffic were handled on the net this month. Appointments: K5EXW as OO, K5HQ as EC, W5WZ as ORS. Traffic: W5FPI 452, TIR 68, JHS 68, RIM 56, K5DFD 17, IHQ 15, MFY 14, AYP 12.

(Continued on page 120)

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RME Equipment in the Amateur Station MAKES THE DIFFERENCE

For 25 years, RME has had the skill for producing superior amateur equipment at a price attractive to the amateur. The tremendous features in RME equipment will fulfill the exacting requirements of the old timer and give the newcomer equipment that will more than meet his expanding needs in the years to come.



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Amateur & Novice	— .01% tol. ea.	\$2.50
Marine & Aircraft	— .005 tol. ea.	4.10
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Special! FT-243 Prec. Calib. to 1st Decimal

2 Meters	Exam: *8010.6 x 18=144.190
	Exam: *8010 x 18=144.180
Note—10 KC difference between the above	
6 Meters	Exam: *8340.6 x 6=50043.6
	Exam: *8340 x 6=50040
Note—3.6 KC difference between the above	

This is a must if you want exact freq. on these 2 pop. bands.
 Hermetically Sealed for your Gonset.....ea. \$2.50
 Thin-Line FT-243 for your Gonset.....ea. \$1.49
 Calibrated FT-243 as exam. above* spec.....ea. .99
 Don't take chances with uncalibrated surplus—Be sure of freq.

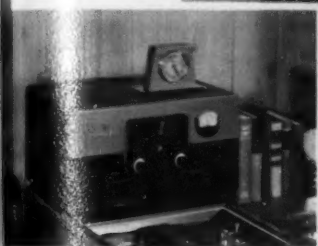
NOVICE BAND FT-243 Fund. or DC-34 Freq.....99c

80 Met. 3701-3748—Steps of 1 KC. FT-243 or DC-34
 40 Met. 7150-7198—Steps of 1 KC. FT-243 only
 Dbl. to 140 Met. 3576-3599. Steps of 1 KC. FT-243 or DC-34
 15 Met. 5276-5312—Steps of 1 KC. FT-243 or DC-34

3005 3000	6000	8073	6350	6073	7350	7520	7640	7660	8090	8300	8560
3010 3020	6030	7073	6362	6073	7362	7575	7660	7660	8100	8310	8567
3015 3025	6035	7075	6365	6075	7365	7578	7665	7665	8105	8315	8570
3020 3030	6040	7080	6370	6080	7370	7582	7670	7670	8110	8320	8573
3025 3035	6045	7085	6375	6085	7375	7585	7675	7675	8115	8325	8576
3030 3040	6050	7090	6380	6090	7380	7590	7680	7680	8120	8330	8579
3035 3045	6055	7095	6385	6095	7385	7595	7685	7685	8125	8335	8582
3040 3050	6060	7100	6390	6100	7390	7600	7690	7690	8130	8340	8585
3045 3055	6065	7105	6395	6105	7395	7605	7695	7695	8135	8345	8588
3050 3060	6070	7110	6400	6110	7400	7610	7700	7700	8140	8350	8591
3055 3065	6075	7115	6405	6115	7405	7615	7705	7705	8145	8355	8594
3060 3070	6080	7120	6410	6120	7410	7620	7710	7710	8150	8360	8597
3065 3075	6085	7125	6415	6125	7415	7625	7715	7715	8155	8365	8600
3070 3080	6090	7130	6420	6130	7420	7630	7720	7720	8160	8370	8603
3075 3085	6095	7135	6425	6135	7425	7635	7725	7725	8165	8375	8606
3080 3090	6100	7140	6430	6140	7430	7640	7730	7730	8170	8380	8609
3085 3095	6105	7145	6435	6145	7435	7645	7735	7735	8175	8385	8612
3090 3100	6110	7150	6440	6150	7440	7650	7740	7740	8180	8390	8615
3095 3105	6115	7155	6445	6155	7445	7655	7745	7745	8185	8395	8618
3100 3110	6120	7160	6450	6160	7450	7660	7750	7750	8190	8400	8621
3105 3115	6125	7165	6455	6165	7455	7665	7755	7755	8195	8405	8624
3110 3120	6130	7170	6460	6170	7460	7670	7760	7760	8200	8410	8627
3115 3125	6135	7175	6465	6175	7465	7675	7765	7765	8205	8415	8630
3120 3130	6140	7180	6470	6180	7470	7680	7770	7770	8210	8420	8633
3125 3135	6145	7185	6475	6185	7475	7685	7775	7775	8215	8425	8636
3130 3140	6150	7190	6480	6190	7480	7690	7780	7780	8220	8430	8639
3135 3145	6155	7195	6485	6195	7485	7695	7785	7785	8225	8435	8642
3140 3150	6160	7200	6490	6200	7490	7700	7790	7790	8230	8440	8645
3145 3155	6165	7205	6495	6205	7495	7705	7795	7795	8235	8445	8648
3150 3160	6170	7210	6500	6210	7500	7710	7800	7800	8240	8450	8651
3155 3165	6175	7215	6505	6215	7505	7715	7805	7805	8245	8455	8654
3160 3170	6180	7220	6510	6220	7510	7720	7810	7810	8250	8460	8657
3165 3175	6185	7225	6515	6225	7515	7725	7815	7815	8255	8465	8660
3170 3180	6190	7230	6520	6230	7520	7730	7820	7820	8260	8470	8663
3175 3185	6195	7235	6525	6235	7525	7735	7825	7825	8265	8475	8666
3180 3190	6200	7240	6530	6240	7530	7740	7830	7830	8270	8480	8669
3185 3195	6205	7245	6535	6245	7535	7745	7835	7835	8275	8485	8672
3190 3200	6210	7250	6540	6250	7540	7750	7840	7840	8280	8490	8675
3195 3205	6215	7255	6545	6255	7545	7755	7845	7845	8285	8495	8678
3200 3210	6220	7260	6550	6260	7550	7760	7850	7850	8290	8500	8681
3205 3215	6225	7265	6555	6265	7555	7765	7855	7855	8295	8505	8684
3210 3220	6230	7270	6560	6270	7560	7770	7860	7860	8300	8510	8687
3215 3225	6235	7275	6565	6275	7565	7775	7865	7865	8305	8515	8690
3220 3230	6240	7280	6570	6280	7570	7780	7870	7870	8310	8520	8693
3225 3235	6245	7285	6575	6285	7575	7785	7875	7875	8315	8525	8696
3230 3240	6250	7290	6580	6290	7580	7790	7880	7880	8320	8530	8699
3235 3245	6255	7295	6585	6295	7585	7795	7885	7885	8325	8535	8702
3240 3250	6260	7300	6590	6300	7590	7800	7890	7890	8330	8540	8705
3245 3255	6265	7305	6595	6305	7595	7805	7895	7895	8335	8545	8708
3250 3260	6270	7310	6600	6310	7600	7810	7900	7900	8340	8550	8711
3255 3265	6275	7315	6605	6315	7605	7815	7905	7905	8345	8555	8714
3260 3270	6280	7320	6610	6320	7610	7820	7910	7910	8350	8560	8717
3265 3275	6285	7325	6615	6325	7615	7825	7915	7915	8355	8565	8720
3270 3280	6290	7330	6620	6330	7620	7830	7920	7920	8360	8570	8723
3275 3285	6295	7335	6625	6335	7625	7835	7925	7925	8365	8575	8726
3280 3290	6300	7340	6630	6340	7630	7840	7930	7930	8370	8580	8729
3285 3295	6305	7345	6635	6345	7635	7845	7935	7935	8375	8585	8732
3290 3300	6310	7350	6640	6350	7640	7850	7940	7940	8380	8590	8735
3295 3305	6315	7355	6645	6355	7645	7855	7945	7945	8385	8595	8738
3300 3310	6320	7360	6650	6360	7650	7860	7950	7950	8390	8600	8741
3305 3315	6325	7365	6655	6365	7655	7865	7955	7955	8395	8605	8744
3310 3320	6330	7370	6660	6370	7660	7870	7960	7960	8400	8610	8747
3315 3325	6335	7375	6665	6375	7665	7875	7965	7965	8405	8615	8750
3320 3330	6340	7380	6670	6380	7670	7880	7970	7970	8410	8620	8753
3325 3335	6345	7385	6675	6385	7675	7885	7975	7975	8415	8625	8756
3330 3340	6350	7390	6680	6390	7680	7890	7980	7980	8420	8630	8759
3335 3345	6355	7395	6685	6395	7685	7895	7985	7985	8425	8635	8762
3340 3350	6360	7400	6690	6400	7690	7900	7990	7990	8430	8640	8765
3345 3355	6365	7405	6695	6405	7695	7905	7995	7995	8435	8645	8768
3350 3360	6370	7410	6700	6410	7700	7910	8000	8000	8440	8650	8771
3355 3365	6375	7415	6705	6415	7705	7915	8005	8005	8445	8655	8774
3360 3370	6380	7420	6710	6420	7710	7920	8010	8010	8450	8660	8777
3365 3375	6385	7425	6715	6425	7715	7925	8015	8015	8455	8665	8780
3370 3380	6390	7430	6720	6430	7720	7930	8020	8020	8460	8670	8783
3375 3385	6395	7435	6725	6435	7725	7935	8025	8025	8465	8675	8786
3380 3390	6400	7440	6730	6440	7730	7940	8030	8030	8470	8680	8789
3385 3395	6405	7445	6735	6445	7735	7945	8035	8035	8475	8685	8792
3390 3400	6410	7450	6740	6450	7740	7950	8040	8040	8480	8690	8795
3395 3405	6415	7455	6745	6455	7745	7955	8045	8045	8485	8695	8798
3400 3410	6420	7460	6750	6460	7750	7960	8050	8050	8490	8700	8801
3405 3415	6425	7465	6755	6465	7755	7965	8055	8055	8495	8705	8804
3410 3420	6430	7470	6760	6470	7760	7970	8060	8060	8500	8710	8807
3415 3425	6435	7475	6765	6475	7765	7975	8065	8065	8505	8715	8810
3420 3430	6440	7480	6770	6480	7770	7980	8070	8070	8510	8720	8813
3425 3435	6445	7485	6775	6485	7775	7985	8075	8075	8515	8725	8816
3430 3440	6450	7490	6780	6490	7780	7990	8080	8080	8520	8730	8819
3435 3445	6455	7495	6785	6495	7785	7995	8085	8085	8525	8735	8822
3440 3450	6460	7500	6790	6500	7790	8000	8090	8090	8530	8740	8825
3445 3455	6465	7505	6795	6505	7795	8005	8095	8095	8535	8745	8828
3450 3460	6470	7510	6800	6510	7800	8010	8100	8100	8540	8750	8831
3455 3465	6475	7515	6805	6515	7805	8015	8105	8105	8545	8755	8834
3460 3470	6480	7520	6810	6520	7810	8020	8110	8110	8550	8760	8837
3465 3475	6485	7525	6815	6525	7815	8025	8115	8115	8555	8765	8840
3470 3480	6490	7530	6820	6530	7820	8030	8120	8120	8560	8770	8843
3475 3485	6495	7535	6825	6535	7825	8035			8565	8775	8846



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This exciting transmitter offers you the ultimate in single sideband . . . 90 watts SSB P.E.P. and CW input . . . 35 watts AM. Self-contained—effectively TVI suppressed. Instant bandswitching 80, 40, 20, 15, and 10 meters. Excellent stability and suppression. Temperature compensated built-in VFO . . . separate crystal control provided for each band. VOX and anti-dip circuits provide excellent voice controlled operation. Pi-network output matches antenna loads from 50 to 600 ohms. More than enough power to drive the Viking "Kilowatt" or grounded-grid kilowatt amplifiers. (Requires Cat. No. 250-34 Power Divider with Viking "Kilowatt".) With tubes and crystals, less key and microphone.

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In a class by itself . . . the ultimate in contemporary transmitter design! The Viking "Kilowatt" is the only transmitter available that provides full, maximum legal power in all modes—SSB, CW, and AM. Class C final amplifier operation provides plate circuit efficiencies in excess of 70% with unequalled broadcast-type high level amplitude modulation. A pair of 4-400A tubes in Class AB₂ easily deliver 2000 watts P.E.P.* in SSB mode—provides a full 1000 watts input in AM mode with a pair of push-pull Type 810 tubes in Class B modulator service. 1000 watts input in Class C CW mode. High efficiency pi-network output circuit will match 50 to 500 ohm antenna loads.

Compact pedestal contains the complete kilowatt—rolls out for easy adjustment or maintenance. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. With tubes.

Cat. No. 240-1000. . . Wired and tested . . . Amateur Net \$1595.00

Matching accessory desk top, back and three-drawer pedestal.

Cat. No. 251-101-1 . . . FOB Corry, Pa. \$132.00

*The F.C.C. permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.



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VIKING "NAVIGATOR" TRANSMITTER/EXCITER

This flexible CW transmitter/exciter has enough RF power to excite most high powered amplifiers on CW and AM. 40 watts input—6146 final amplifier tube. Bandswitching 160 through 10 meters. Built-in VFO or crystal control—TVI suppressed—timed sequence keying. Pi-network output will match 40 to 600 ohm loads. With tubes and self-contained power supply, less crystals and key.

Cat. No. 240-126-1...Kit.....Amateur Net \$149.50
Cat. No. 240-126-2...Wired and tested.....Amateur Net \$199.50

VIKING "ADVENTURER" TRANSMITTER

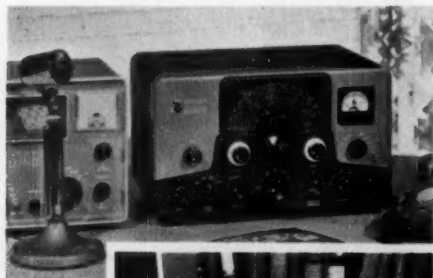
This completely self-contained 50 watt CW transmitter was used to earn the first novice WAC! (Worked All Continents) Instant bandswitching 80 through 10 meters... operates by crystal or external VFO control. Rugged 807 transmitting tube—wide range pi-network output—TVI suppressed—timed sequence keying. Easy to assemble—complete with tubes, less crystals and key.

Cat. No. 240-181-1...Kit.....Amateur Net \$54.95

SPEECH AMPLIFIER/SCREEN MODULATOR—Designed to provide phone operation for the "Adventurer". High gain—use with crystal or dynamic microphones. Simple installation. With tubes.

Cat. No. 250-40...Kit.....Amateur Net \$12.25

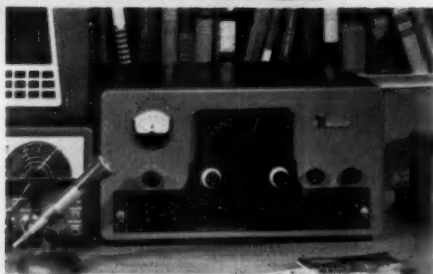
Pick your power...choose your features



VIKING "RANGER" TRANSMITTER/EXCITER

This popular 75 watt CW or 65 watt phone transmitter will also serve as an RF and audio exciter for high power equipment. Completely self-contained... TVI suppressed... instant bandswitching 160 through 10 meters. Extremely stable built-in VFO or crystal control. Final amplifier tube is a 6146. Easy to assemble—with tubes, less crystals, key and microphone.

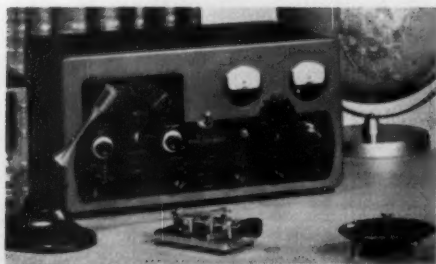
Cat. No. 240-161-1...Kit.....Amateur Net \$329.50
Cat. No. 240-161-2...Wired and tested.....Amateur Net \$329.50



VIKING "VALIANT" TRANSMITTER

Here is power to slice through terrific QRM! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network output matches antenna loads from 50 to 600 ohms... final amplifier utilizes three 6146 tubes in parallel. TVI suppressed—timed sequence keying—low level audio clipping—built-in low pass audio filter—self-contained power supplies. Complete with tubes, less crystals, key and microphone.

Cat. No. 240-104-1...Kit.....Amateur Net \$349.50
240-104-2...Wired and tested.....\$439.50

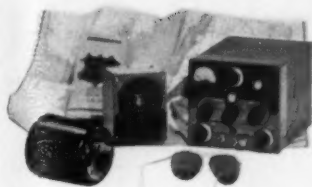


VIKING "FIVE HUNDRED" TRANSMITTER

Rated a full 600 watts CW... 500 watts phone and SSB. (P.E.P. with auxiliary SSB exciter.) Compact RF unit designed for desk-top operation—power supply/modulator unit may be placed in any convenient location. All exciter stages ganged to VFO tuning—also may be operated by crystal control. Instant bandswitching 80 through 10 meters—TVI suppressed—high gain push-to-talk audio system—low level audio clipping. Final amplifier uses a 4-400A high efficiency tetrode. Pi-network output will match a wide range of antenna impedances. Complete with tubes, less crystals, key and microphone.

Cat. No. 240-500-1...Kit.....Amateur Net \$749.50
Cat. No. 240-500-2...Wired and tested.....Amateur Net \$949.50

for mobile...



VIKING "MOBILE" TRANSMITTER

Rated at 60 watts PA input—powerful PP807 modulator provides extra audio punch! Instant bandswitching 75 through 10 meters. All stages ganged to a single tuning knob. Under-dash mounting. Specify 6 or 12 volts. Less tubes, crystals, microphone and power supply.

Cat. No. 240-141-1...Kit..... Amateur Net \$107.00
Cat. No. 240-141-2...Wired and tested on special order only.

MOBILE VFO—Small size—rugged construction. Temperature compensated and voltage regulated. Calibrated 75 through 10. With tubes.

Cat. No. 240-152-1...Kit..... Amateur Net \$33.95
Cat. No. 240-152-2...Wired and tested..... Amateur Net \$52.50

"WHIPLOAD-6"—High efficiency base loading for mobile whips. Bandswitching 75 through 10 meters. High "Q". Fibre-glass housing.

Cat. No. 250-26...Wired and tested..... Amateur Net \$16.95

for VHF...

VIKING "6N2" TRANSMITTER

Rated at 150 watts CW and 100 watts phone—bandswitching 6 and 2 meters! TVI suppressed—may be used with Viking I, II, "Ranger" or similar power supply/modulator combinations. Operates by crystal control or external VFO with 8-9 mc. output. With tubes, less crystals, key and microphone.

Cat. No. 240-201-1...Kit..... Amateur Net \$129.50
Cat. No. 240-201-2...Wired and tested..... Amateur Net \$169.50

TWO METER VFO—Replaces 8 mc. crystals in most two meter equipment. Temperature compensated—excellent stability. Output range: 7.995 mc. to 8.235 mc. Lucite dial calibrated 144 to 148 mc. Requires 6.3 volts at .3 amp. and 250-325 volts at 10 ma. With tubes and power cable.

Cat. No. 240-132-1...Kit..... Amateur Net \$29.50
Cat. No. 240-132-2...Wired and tested..... Amateur Net \$46.50



2 exciting desk-top linear amplifiers...

VIKING "COURIER" AMPLIFIER

Rated at solid 500 watts P.E.P. input with auxiliary SSB exciter as a Class B linear amplifier; 500 watts CW or 200 watts AM linear. Self-contained desk-top package—may be driven by the Viking "Navigator", "Ranger", "Pacemaker" or other unit of comparable output. Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts depending on mode and frequency desired. Employs two 811A triodes in parallel. Pi-network output will match 40 to 600 ohm loads. TVI suppressed. With tubes and built-in power supply.

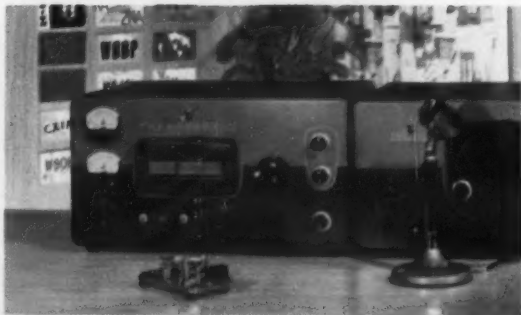
Cat. No. 240-352-1...Kit..... Amateur Net \$244.50
Cat. No. 240-352-2...Wired and tested. Amateur Net \$289.50



VIKING "THUNDERBOLT" AMPLIFIER

The hottest linear amplifier on the market—engineered to provide maximum "talk-power" to smash through QRM. 2000 watts P.E.P. input SSB; 1000 watts CW; 800 watts AM linear; in a completely self-contained desk-top package. Delivers a dominant signal on all amateur bands—continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Navigator", "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: approx. 10 watts in Class AB₁ linear; 20 watts Class C continuous wave. Final amplifier employs two 4-400A tetrodes in parallel, bridge neutralized. Complete with tubes and built-in power supply.

Cat. No. 240-353-1...Kit..... Amateur Net \$524.50
Cat. No. 240-353-2...Wired and tested. Amateur Net \$589.50



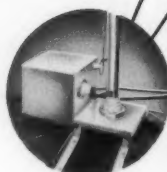
*The F.C.C. permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.



138-420-3



138-112-51



137-102

Antennas, Beams and Rotators...

PRE-TUNED BEAMS—Rugged, semi-wide spaced with balun matching sections. Approximately 9.0 db gain over tuned dipole—more than 27 db front-to-back ratio with low SWR. With 3 elements, boom and balun.

Cat. No. 138-420-3... 20 Meters... Amateur Net \$139.50
Cat. No. 138-415-3... 15 Meters... Amateur Net \$110.00
Cat. No. 138-410-3... 10 Meters... Amateur Net \$ 79.50

"ROTOMATIC" ROTATOR—Supports beam antennas weighing up to 175 pounds. Rotates 1/4 RPM—over all gear reduction, 1200 to 1. Housing is cast aluminum with 5/16" steel rotating table. Hinged to tilt 90°. With desk-top control box.

Cat. No. 138-112-51... With limit switches for 370° rotation for coaxial line... Amateur Net \$354.00

"MATCHSTICK"—Fully automatic, pre-tuned multi-band vertical antenna system. Bandswitching 80 through 10 meters. Remotely motor driven from operating position. Easily mounts on roof top or in limited space location. Low SWR (less than 2 to 1) all bands. Impedance: 52 ohms. With 35' mast, base, tuning network, relays, control box and Dacron guy lines.

Cat. No. 137-102... Pre-tuned... Amateur Net \$129.80

Station Accessories...

VIKING "MATCHBOXES"—Self-contained, bandswitching 80 through 10 meters. Provides integrated antenna matching and switching. Tunes out large amounts of reactance. No load-tapping or plug-in coils necessary.

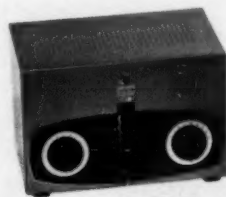
Cat. No. 250-23... 27.5 watts, wired... Amateur Net \$ 54.95
Cat. No. 250-30... Kilowatt, wired... Amateur Net \$124.50

DIRECTIONAL COUPLER AND INDICATOR—Provides continuous reading of SWR and relative power in transmission line. Coupler may be permanently installed in 52 ohm coaxial line—handles maximum legal power specified by FCC. The Indicator is a 0-100 microammeter calibrated in SWR and relative power.

Cat. No. 250-37... Coupler... Amateur Net \$11.75
Cat. No. 250-38... Indicator... Amateur Net \$25.00

T-R SWITCH—Provides instantaneous break-in on SSB, DSB, CW or AM. Excellent receiver isolation. Gain: 2 db at 30 mcs.; 6 db at 3.5 mcs. Rated at 4000 watts peak power. With tube, power supply and provision for RF probe.

Cat. No. 250-39... Wired... Amateur Net \$27.75



250-30



250-39



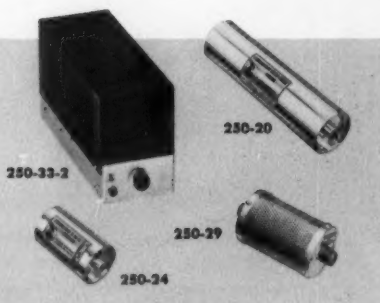
250-38



250-37



250-38



250-33-2

250-20

250-29

250-24

VIKING AUDIO AMPLIFIER—Self-contained 10 watt speech amplifier, complete with power supply and tubes. Speech clipping and filtering improves performance and effectiveness of your AM transmitter.

Cat. No. 250-33-1... Kit... Amateur Net \$73.80
Cat. No. 250-33-2... Wired and tested... Amateur Net \$99.80

LOW PASS FILTER—Handles more than 1000 watts RF. 75 db or more attenuation above 34 mc. Wired and pre-tuned.

Cat. No. 250-20... 52 Ohms Impedance... Amateur Net \$14.95
Cat. No. 250-35... 72 Ohms Impedance... Amateur Net \$14.95

SWR BRIDGE—Provides accurate measurement of SWR for effective use of low pass filter and antenna coupler.

Cat. No. 250-24... 52 Ohms Impedance... Amateur Net \$9.75

POWER REDUCER—Provides up to 20 watts continuous dissipation, permitting 100-150 watt transmitters such as Johnson Viking, Collins 32V to serve as exciters for the Viking "Kilowatt". Completely shielded.

Cat. No. 250-29... Amateur Net \$13.95

CRYSTAL CALIBRATOR—Provides accurate 100 kc check points to 55 mc. Requires 6.3 volts at .15 amps and 150-300 volts at 2 ma. With tube and crystal.

Cat. No. 250-28... Wired and tested... Amateur Net \$17.95

"SIGNAL SENTRY"—Monitors CW or phone signals up to 50 mc. Powered by receiver. With tubes.

Cat. No. 250-25... Wired and tested... Amateur Net \$22.00

KEYS AND PRACTICE SETS—See your distributor or write for descriptive literature on Johnson's complete key line.



250-28



250-25




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By replacing the dynamotor or vibrator, transformer, rectifier and filter with one compact, lightweight, troublefree unit it repays its cost in economical operation, long life, and lowered repair and replacement bills.

You will be operating the same quality power supply manufactured by Universal for military and commercial communications equipment and other electronic systems where proved reliability is important. It contains no moving parts. There is NO arcing. Your mobile equipment is not modern without a Universal Power Supply!

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OUTPUTS: Receiver Supply—

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(12 oz.—2" x 3½" x 3")

Transceiver Supplies—
(Rated for continuous duty with heat sink)

450v DC @ 255ma

250v DC @ 160ma

450v DC @ 255ma

OR 250v DC @ 150ma

—55v DC @ 10ma

(2½ lbs.—3½" x 5½" x 3½")

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You will realize gains in tube life as well as significantly lower operating costs.

Write today for information on converting to...



Export inquiries are encouraged.

MACHLETT LABORATORIES, INC.
Springdale, Connecticut

meter operation soon. The Niles ARC members were hosts to seventy hams from the Michigan Area at their annual dinner meeting. There was an excellent program on the subject of antennas by CVQ and EYD. All present enjoyed their eye-opening demonstration which employed sweep methods for displaying the effects of antenna and feeder adjustments using convenient v.h.f. equipment. Traffic: (Mar.) W8WGU 508, K8NAW 129, W8ILP 115, NOH 105, YAN 82, GKT 79, FWQ 78, FX 73, RTN 60, DAP 64, OCC 57, TBP 40, K8AXL 34, ADD 31, CKD 31, W8FDO 24, VYG 21, AUD 19, QIX 18, RAE 17, SCW 17, JKX 16, OGY 16, WVL 15, HKT 14, IZS 13, SWN 11, DSE 8, RJC 8, QOI 6, SJF 6, TIC 6, WXO 6, FSZ 4, UCN 2. (Feb.) W8GKT 81, NUL 40, K8AXL 32, W8RVZ 23, FSZ 5.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE, SEC: UPB, RM: DAE, PAMS: HPP, HUX and HZJ. Thanks for reelecting me as SCM. Greater Cincinnati ARA's 1958 officers are SMQ, pres.; QBJ, vice-pres.; WJV, 2nd vice-pres.; LPC, rec. sec.; JVE, corr. sec.; and K8NTO, treas. K8NTO is a new ham in Zanesville. KN8IBE and K8CKV are a father-son team. The stork brought baby boys to QJL and UNE. UPH handled over 1000 messages in February. He also made WAS. OUU is at Ohio State. TZO and K8BOF gave themselves an HQ-110 for their 10th wedding anniversary and TZO received a VA-JF. Dayton ARA's R-F Carrier reports that HAF is in the hospital and the v.h.f. group elected TEK, pres.; GHX, vice-pres.; and K8IYW secy.-treas. The Tusco RC reports that MEI, GAC, WFE and LVW form its TVI committee. SBM has a new 10-meter beam and BIM, BRN, EUK, FMW, FSM, GAB, GAC, GUP, HQ, IKM, JHJ, LVW, MEI, MVX, NCF, NQR, NVQ, OYV, QXH, RAS, RNL, RQQ, SBM, STR, TAZ, TDB, TND, TTJ, WJF, WSH, WTQ, JSCY, JNBR, 3PON, 6FGJ, 6FLW, K6DQA, K6EXQ and K25JJ have been issued Knuckelhead Net certificates. ARC's Q-5 tells us that K8AOH repeats construction and operation of a 220-Mc. transmitter-receiver. LVH made WAS and K8BPY dropped the "N." WE's father passed on. DRW and K8HMJ have their General Class tickets. K8NJB is a new ham in Steubenville. The Jefferson County AREC relayed messages during the "Cerebral Palsy Telecast" with DNQ, DRW, ERR, EZC, FRV, MKT, ZRI, K8s BYF, DQG, DTO, HMJ, IGO and K8NJB taking part in Steubenville and AXR, BLP, RZ, UJU, VYB, WIF, WSV, K8s ANU, EPR and HGV in East Liverpool. The Cuyahoga County AREC helped the Easter Seal drive by using mobiles to pick up the money from various parts of the county. Those who took part were AEU, BAH, BHR, LFY, LHX, MVU, NRI, PVC, SQU, TFW, TTF, TTR, K8s AAP, BWH, CWW, DPA, ETF, GHW, IHC and JGH. CTZ and SQU provided valuable assistance to the Standard Oil Research Laboratory, which is tracking the satellites. K8HHY won the Hallcrafters a.s.b. contest and received a SX-101 receiver. ARO is moving out West. HXB worked WAS on mobile. We wish to thank the Ohio Valley ARA for putting KC4AF on the air and giving us Navassa Island. K8s JIC and JIE are new hams in Bay Village. The Piqua RC's 1958 officers are JIE, pres.; and TTU, secy.-treas. THJ is back from Florida. BZX is working DX. Toledo's Shack Gossip informs that the "Ham of the Month" is VKR; IAA, one of its editors, is moving from Toledo and VJO will fill her shoes; K8EUC has a new Ranger; CFN has a new DX-100; QES spent four weeks in Florida; K8GOT dropped the "N"; and winners of hidden transmitter hunts were HYE on 10, K8DHL on 160 and K8DPE on 6 meters. The Ohio Phone Net is a growing traffic-handling net and needs more outlets in parts of the State. During March 199 messages were cleared. GFE and K8BPX made BPL. The Fulton County ARC demonstrated ham radio to the local Boy Scouts. New appointments: VKR, K8s ABI and DFN as ECs. Traffic: (Mar.) W8UPH 1073, K8BPX 510, W8SZU 270, GFE 214, DAE 103, K8DQJ 93, W8QLJ 74, IBX 60, HXB 52, AL 42, VYU 41, K8CCZ 30, W8HJZ 30, NNX 30, ARO 29, K8HXF 27, W8YGR 27, DSQ 24, STR 24, WYU 24, K8BIZ 20, CTQ 20, W8GQD 18, WTO 16, K8EVT 12, W8FFK 11, K8AAG 10, W8LT 10, RO 10, MXO 9, MGC 5, LGR 4, LLY 4, SMW 2, STF 2, CQP 1, EEQ 1. (Feb.) K8BIZ 25, W8RO 1.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC, RM: PHX, PAMS: JIG and NOC. Section nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, ESS on 3590 kc. at 1800, E.N.Y. AREC Net on 145.35 Mc. Fri. at 2100, MHT (Novice) on 3716 kc. Sat. at 1300. K2UTI, operating K4WBG at Ft. Knox, sends greetings to his E.N.Y. friends. SGZ, EOM and K2LOI spoke on the E.N.Y. Medical

(Continued on page 124)



FIRST AGAIN WITH
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Now... a complete high performance 10-meter station
... transmitter, receiver, power supply... "packaged"
for the big result, the big value.

Complete! Connect antenna, mike and AC power—operate—in a big way.

transmitter... The husky 50 watt transmitter uses Type 6146 tube, has pi network output. Multiplier stages are ganged and tracked with highly stable, calibrated VFO. (Crystal control is optional.) VFO spotting switch facilitates "zeroing in" on desired stations. Panel meter is switchable to read amplifier grid or plate currents or modulator plate current.

receiver... The sensitive, selective 10-meter communications receiver utilizes double-conversion, also features adjustable "squellch" for muted standby, an effective noise limiter, "S" meter, panel-mounted loudspeaker. Coverage is 28-29.7 mcs. Dial is full-vision, has planetary vernier drive for easy tuning.

power supply... Heavy-duty 115 volt AC power supply is built-in.

A single compact housing... Everything in a single compact housing... an area less than one square foot. 13" wide, 7½" high, 12½" deep.

Cabinet and panel are finished in Alpine White, complemented with Gun Metal Blue knobs. Attractive... functional.

A big value! A "package" with every modern feature at a selling price that is unusually low.

Net 299.50

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"Phasemaster II - B"

CHECK THESE FEATURES !!

SSB or DSB suppressed carrier or with carrier, PM and CW.

6146 power amplifier delivers 65 PEP watts output, giving sufficient power to drive nearly all types of linear amplifiers INCLUDING grounded grid finals. Calibrate control allows variable control of signal for zero beating VFO to receiver frequency or TOF (talk on frequency.)

Voltage Regulation of 6146 Screen and 9MC OSC.

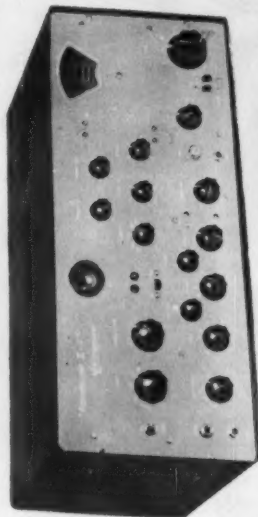
Temperature compensating condensers in critical 9MC circuit for improved stability.

Built in 3500 cps low pass audio filter.

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Amateur Net

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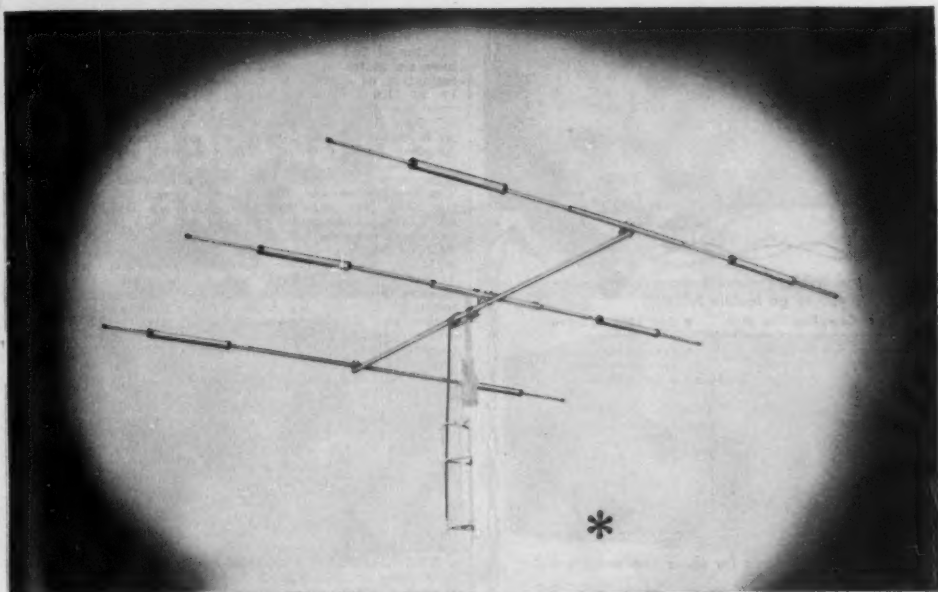
MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

Net at the Albany Club on Mar. 23. Welcome to KN2LLA in Hillsdale with a Globe Chief and an 8-35. LCB reports W4AS was made in three weeks on 40-meter c.w. Appointment: K2ZMH as Columbia Co. EC. Endorsement: TYC as ORS. The section AREC Net reports an average of 15 stations on its weekly drills. K2QIX picked up Explorer II six minutes after launching before the satellite was in orbit. A total of 20 states on 2 meters is reported by LWI. The bad March WX was hard on antennas, including the beams at DIN. Interference—its causes, cures and public approach, featured the April meeting of the Schenectady Club. K2HPQ has been instructing General Class candidates in Albany. Congrats to K2YTD on another BPL card. Unless new members QNI, the manager is considering closing the MHT Net. How about it, Novices? A written disaster emergency plan was formulated by EC WWK of Schenectady Co. Any section EC can receive a copy upon request to WWK Lighthouse Larry, J2K, was speaker at the Elmira Hamfest in March. Traffic: (Mar.) K2HPQ 387 YTD 221, LK1 174, VTW 146, W2ATA 129, K2YJL 102, UTV 70, W2EFU 62, K2HNW 40, W2SZ 38, K2HJX 36, PXM 26, W2LWI 21, K2CKG 17, KN2DSC 10, W2ERO 8.

NEW YORK CITY AND LONG ISLAND—SCM. Harry J. Dannals, W2TUK—SEC: ADO, RM: WFL, PAM: OBW, V.H.F. PAM: K2EQH. Section Nets: NLI, on 3630 kc, nightly at 1030 EDST and Sat, at 1915 EDST; NYC-LIPN, on 3908 kc, Mon, through Sat, from 1730 to 1830 EDST; NYC-LI AREC, on 3908 kc, Sun, at 0900 EDST; U.H.F. Traffic Net, on 145.8 Mc, Wed, at 2000 EDST. Please note the change in time for the Sunday AREC Net. BPL cards go to KEB and VDT and VDT received his BPL Medalion. Once again the request goes out for stations in the N.Y.C. area. Messages for the Metropolitan Area must be mailed because of a lack of stations to accept the traffic. Can you help? K2YUI needs only two states to complete his WAS. K2SSE worked all Delaware counties. K2DQC dropped the "N." K2RKL is looking for more stations on 432 Mc. PZE installed a new t.r. switch. Ex-ELT is now K4UAP in Florida. A new 4-400A linear amplifier is in use at HQL. K2FC plays chess with UB5KBR via radio. LCP has his 420-Mc. receiver working. John sends ARRL Official Bulletins on 6-meter m.c.w., followed by voice for checking. This is good code practice for the Tech. Class licensees on 50 Mc. DTL logged a visit from CE3DIT. PRB is mobiling with his new KWM-1. WN2TNP is operating on 15 and 40 meters. A new 8X-101 is in use at KN2IVT. WMG is using a new CD-HAM rotator. K2OEG needs only two more states to complete his WAS. More than 20 mobiles participated in a recent 6-meter hidden transmitter hunt. These hunts and those conducted on 2 and 10 meters have met with great success throughout the section. New stations on 50 Mc. are K2s IYZ, OBM, PEE, RBS and UCK. K2USL joined the 6 meter mobileers. TWZ, a cliff-dweller, is active on 50 Mc. A new DX-100 is now in operation at K2MEM. HQN received his 25-w.p.m. Code Proficiency endorsement. K2UAQ is enjoying the DX openings on 10 meters. Ex-MIX now signs KARFF in Florida. OI is in W6-Land and looks forward to contacts with the NYC-LI gang on 10 and 15 meters. Ex-JBP now signs K6MTX. BYVB, YBT's XYL, dropped the "N." K2TMJ is mobile with an Elmac. KNA, EC and RO for Suffolk County, reports renewal of the RACES license. K2BGP. New officers of the South Side RC are K2TBU, pres.; K2UZH, vice-pres.; KN2LLB, secy-treas.; and K2KAT, club advisor. K2TBU received his WAS certificate. JEG and K2YKQ dropped the "N." MZN is mobile on 10 meters. K2KUM is a proud grandpa. K2VWF has a new Babcock rig. K2TPU passed his Tech. Class exam. New officers of the Eastern Suffolk RC are K2OQC, pres.; K2EC, vice-pres.; K2UEK, secy.; and KDN, treas. K2PEH has Gonset II, v.f.o. and linear on 144 Mc. GG's son and your SCM's brother, 5ZRA, passed his General Class exam and operates from Fort Worth with an 8X-101 and an HT-32. Best wishes for a successful Field Day to our section's clubs and groups. BCNU from YKQ/2. Traffic: (Mar.) W2KEB 3459, VDT 525, JOA 383, OME 322, K2PHF 190, W2DSC 121, BO 103, LDQ 60, CKQ 59, C80 39, K2RJO 48, BH 47, RKL 33, SEK 28, W2BQ 21, UGF 18, K2VUI 17, VIX 16, DDC 14, W2OBW 13, GP 12, K2SSE 11, W2DUS 10, IAG 10, EC 9, HQN 9, PZE 9, IN 8, PF 7, TUK 7, YBT 7, IVS 5, JCA 5, K2EQH 4, W2GV 4, K2LUM 4, AAW 3, W2MDM 2, K2ZEM 2, DEM 1, IRS 1. (Feb.) W2DSC 24, K2DDC 12, VIX 4.

NORTHERN NEW JERSEY—SCM. Lloyd H. Manamon, W2VQR—SEC: HIN, PAM: VDE, V.H.F. PAM: K2KYR. RMs: BBC, CGG and NKD. K2JLN recently made a 900-mile hop to India on 220 Mc. K2JLN reports hearing Norway on 30.5 and 51.5 Mc. nt 2300-0002 EST. K2OAM was elected asst. alternate

(Continued on page 126)



INCOMPARABLE

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**TRAP
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EXCLUSIVE TRAP DESIGN - LIFETIME WEATHERPROOFED!

ANTI-SAG CONSTRUCTION!

LOW SWR - REMARKABLY FLAT ACROSS BANDS!

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Also: World famous "Vest Pocket" and "Super" Amateur Beams,
Commercial Arrays and other fine products.

Write for free Catalog, H-58.

Model TA-33

Beautifully constructed 3 element beam for operation on 10, 15 or 20 meters. Forward gain is 8db, front-to-back is 25db, and SWR is 1.5/1. Maximum element length is 28 ft. and weighs only 47 lbs. Boom is just 14 ft.

\$99.75

Model TA-32

Similar to Model TA-33, but has 2 elements operating on 10, 15 and 20 meters. Forward gain is 5.5db, front-to-back is 20db and SWR is 1.5/1. Featuring a short boom of just 7 ft. and max. element length of 28 ft. Weight is 34 lbs. Converts to Model TA-33.

\$69.50

Model V-4-6

This low cost, high performance vertical antenna covers all bands from 10 thru 40 meters. Requires little space and may be mounted on ground or roof-top. Low SWR and band switching is automatic. Loading coil available for 80 M.

\$27.95

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G-66B RECEIVER



G-77A TRANSMITTER

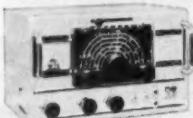
Just \$50.85 down for these two great units!

Compactness without compromise... the G-66B and G-77A are excellent examples of Gonset's skilled engineering... and you'll make your best deal at Burghardt's! **G-66B:** excellent reception in amateur bands 80, 40, 20, 15, and 10 meters — as well as standard broadcast band. Built-in "5" meter — antenna trimmer — noise limiter. **G-77A:** Packs real power — 50 to 60 watts input, fully modulated. Covers 80, 40, 20, 15, and 10 meters. Built-in VFO — crystal optional. Pi-network output. Press-to-talk. With power supply and installation kit.

G-66B, less power supply.....\$209.50 Net

G-77A, with power supply.....\$299.00 Net

"SUPER-SIX" — 6 band converter. Covers 75, 40, 20, 15, and 11-10 meters; 19 and 49 meter 8C bands. Powered by receiver.....\$52.50 Net



AF-67 TRANSCITER

AF-67 TRANSCITER — Serves as exciter, speech amplifier, VFO, driver or a complete low powered transmitter. 7 amateur bands — 160 through 10 meters — single-knob bandswitching. Built-in VFO. Operates from 6 to 12 volt DC source... \$17.70 down... \$9.64 a month for 18 months.

PS-2V POWER SUPPLY — For AF-67 or other applications.....\$49.50 Amateur Net

PMR-7 RECEIVER — Complete 10 tube, dual conversion mobile receiver. 10 through 160 meters and standard broadcast band. Built-in noise limiter — adjustable squelch — BFO... \$15.90 down... \$8.66 a month for 18 months.

PSR-612 POWER SUPPLY — For PMR-7, 6 or 12 volts.....\$34.00 Amateur Net

REGENCY ATC-1 CONVERTER — Self-powered, small and light, the transistorized ATC-1 may be easily mounted in any convenient spot in your car. AM, CW, and SSB on 80, 40, 20, 15, and 10 meters. High stability — outstanding selectivity.....\$79.50 Amateur Net

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director of 2nd Call Area TCPN, K2SBDT and K2VAB have six states to go for WAS. K2VAB announces the formation of the Eastern States Novice Net, on 7160 kc. at 1100 EST with K2VAB as net control. K2GIF was appointed personnel and publications chairman for New Jersey MARS. K2MFX is back on the air. ADE was a recent speaker at the Delaware Lehigh Amateur Radio Club. K2SYB is building a new modulator for his DX-35. BRC reports that NJN has gone on a 7-day-week basis with net sessions on Sun. The Sunday sessions are at lower speeds and ZVW is the NCS. New calls heard on NJN are RW, K2VAB and ZHK. Old-timers returning to NJN after long periods of absence are NAK, CQB, and K2MSX. The TCRA is well along with Field Day plans with K2MYQ as coordinator. Recent club speakers at the TCRA were GHK, TWC and K2OQG. NYI lost his antenna during a recent storm. 4UWA/2 is being transferred to Germany for Army duty. K2RRH is building a new rig. KN2LDZ and KN2LEK are new Novices in Lyndhurst. CFB edits a club bulletin for the Ocean County ARA. GKE passed the Extra Class exam and received his DXCC certificate with 103 countries confirmed. K2BHQ had a temporary drop in traffic skeds. The GSARA and the FMRC made a trip to ARRL Apr. 26. The Ft. Monmouth Club, K2USA, is equipped with all new gear. GVU is waiting for delivery of a new C.E. 100-V rig. K2QYI and VYY were visitors to the Metuchen YMCA Radio Club. IUC has joined MARS, and has also become a member of the Night Owl Net. MQT expects to work 10-meter mobile from Newfoundland during July and August. K2SBG has converted his Gonset for either 6 or 12-volt operation by the flick of a switch. K2PZV is building a 6-meter linear final utilizing 4-400A. HDW, net mgr. for NJN, has issued his second net bulletin. K2PSX suggests we hold a NJN QSO Party. Drop the SCM a line and express your views on this. K2PSX is looking for contacts with Warren, Cape May and Hunterdon Counties for WANJ. KN2HHS has passed the Tech. Class exam. PWX is laying low until the 144-Mc. skip sets in. K2ICE is knocking the DX off on 144 Mc. Traffic: (Mar.) K2RRH 255, OAM 150, W2ZVW 121, MLW 99, RXL 75, BRC 59, K2QYI 45, GIF 38, W0XL 34, K2VAB 34, GER 28, ZHR 26, W2EWZ 24, TOD 20, WN2RFS 20, K2UNL 20, W2QW 18, K2BQW 16, W2KFR 15, BYE 11, EBG 10, K2BHQ 7, MFX 7, ULF 6, W2CFB 5, CVW 5, K2MFF 5, WN2ORL 3, W2QYV 3, KN2ZSQ 3, K2BHQ 2, W2CJX 2, K2JTU 2, KVR 2, W2N1Y 2, K2QFG 2, SYB 2, W2IUC 1, PSU 1, RZO 1, KN2ZOR 1.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—New officers of the Cedar Valley Club are LPK, pres.; YBE, vice-pres.; DGF, secy.; KØJYI, treas. The Central Iowa Club's officers are GVG, pres.; SLG, vice-pres.; EFL, secy.-treas. The Graceland Ham Club of Lamoni has been reorganized with ZVA, pres.; W. Groner, vice-pres.; M. Miller, secy.-treas. New appointments: KØMIB and LKL as ECs and IQB as OO. NYX and GXQ renewed their ORS appointments. LTB, pres. of Hygain Antenna Products, gave a demonstration for the Marshalltown, Cedar Rapids and Burlington Clubs. Story County has begun organization of RACES. The u.h.f. committee of the Cedar Valley Club is giving certificates to any station working 50 Iowa stations on 6 meters. KØJJW has dropped the "N" from her call. GXQ received his BPL Medallion. The 160-Meter Net will hold its picnic June 8 at Clarion. BLH has a new NC-300. Traffic: (Mar.) WØBDR 1753, SCA 1606, LCX 1352, PZO 1127, LGG 936, KØCLB 582, WØGXQ 527, CZ 508, KNØMMZ 130, KØHO 113, WØQVA 99, BLH 89, KØCYF 89, WØLJW 82, KØBLJ 73, WØNGS 47, VWF 46, KØDON 45, WAD 35, WØSLC 31, ITD 27, KØAHZ 23, WØBTR 23, NYX 21, IUY 20, YI 20, BTX 19, GQ 18, FMZ 17, NTB 17, KØGXC 15, WØCGL 14, KØAPL 12, HBD 12, IGU 12, WØJPJ 11, VLF 11, KØBRE 9, EXN 9, DVO 8, WØPTL 8, UHO 8, ZMU 8, KØGOQ 7, HFQ 7, WØREM 7, MEL 6, KØBPE 5, WØFDM 5, UNE 5, VQX 5, KØFEB 1, GHH 4, WØJDV 4, WØBLEH 4, WØL 4, COD 3, KØJYI 3, AAH 2, WØPKQ 1. (Feb.) WØGHZ 7.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH, RM: QGG, PAM: FNS, U.H.F. PAM: ZJB. The Chippewa ARC of Ottawa announces the following new officers: KØMER, pres.; WVI, vice-pres.; IKA, treas. Code and theory classes are held each meeting. The KVRG of Topeka started code and theory classes Apr. 1 with 40 enrolled. The Mike and Key Radio Club of Parsons sent over 400 messages to Pittsburg for the Cerebral Palsy Telethon Mar. 8. QQQ, Kansas State's club station, at its annual open house handled 268 messages with the help of KØBLX, DPS and HVJ. KNØLFR, of Wichita, is the first Novice to earn the

(Continued on page 128)

THE BROADBAND TWINS



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EXCITER-TRANSMITTER**

NO TUNING (except VFO), uses famous CE BROADBAND system. PRECISION LINEAR VFO—1KC Calibration. Single Knob Bandswitch 80 thru 10. SSB—DSB—AM—PM—CW and FSK. RF Output adjustable 10 to 100 Watts PEP. Meter reads Watts Input, Amps Output and Carrier Suppression. 2" RF Scope. Speech Level and Load Mismatch Indicators. Audio Filter — Inverse Feedback — 50 db Carrier and Sideband Suppression.

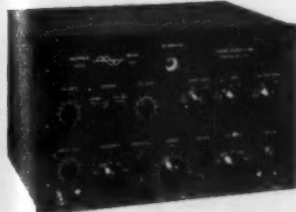
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MODEL 20A



**THESE MULTIPHASE EXCITERS
PIONEERED AMATEUR SSB**

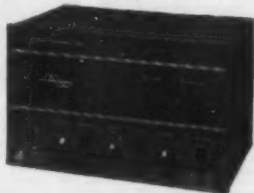
MODEL 10B — 10 watts PEP. Plug-in coils 160 thru 10 meters. Perfect voice control on SSB—DSB—AM and PM — CW break-in; Carrier and calibrate level controls. 40 DB suppression.

Wired.....\$179.50 Kit.....\$139.50

MODEL 20A — 20 watts PEP. Bandswitched 160 thru 10 meters. SSB—DSB—AM—PM and CW. Magic eye monitors carrier null and peak modulation. Ideal for driving AB¹, AB², and most Class B linears.

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MODEL 10B



MODEL GC-1. Gated Compression Amplifier. Connects between receiver and speaker. Automatically brings all received signals to same level—no blasting. Compensates for receiver AVC deficiencies. Compresses a 40 db increase in level to less than 3 db. Magic Eye continuously monitors compression value. Keep peace with your family and neighbors — buy a GC-1.

KIT....\$49.50 Wired....\$39.50

MODEL MM-2. 3" RF analyzer scope for use on SSB—DSB—AM—PM and CW. MONITORS RECEIVED AND TRANSMITTED SIGNALS thru new electronic switching circuits. NO TUNING — BROADBAND response 1MC to 55MC at power levels of 5 watts to 5 KW. SIMPLE CONNECTIONS. Built-in 1KC oscillator for exciter alignment. Plug-in IF adapters available for 450-500 KC, 80 KC and 50 KC.

IF adapter RM-455 or RM-80 or RM-50\$9.95
MM-2 (less adapter) wired.\$129.50
Kit\$99.50



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NC-188
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Fine quality, general coverage 4-band receiver (540 kc to 40 mc.) with calibrated electrical bandspread for 10, 11, 15, 20, 40 and 80 meter bands. 12" slide-rule dial has edge and backlighting. Has range tuning RF amplifier stage and separate, temperature compensated high frequency oscillator. Receives AM, CW and SSB. BFO for CW and SSB. Has two IF amplifier stages and two audio stages with tone control, separate antenna trimmer, RF and AF gain control, automatic noise limiter, and "S" meter. 16-13/16" W., 10" H., 10 1/2" D. Shpg. wt., 35 lbs.

National NC-188Net 159.95

National NTS-1. Matching Speaker for NC-188.....Net 17.50

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RECEIVER
HQ-110

NET ONLY 229.00

Less clock-timer



A 12 tube superhet receiver with dual conversion. Full dial coverage of 6, 10, 15, 20, 40, 80, and 160 meter bands. every 50 kcs on 8 meter band. AVC operates on RF and IF. Q multiplier continuously variable from 100 cps to 3 kcs. Separate stabilized BFO and linear detector for SSB and CW reception. Antenna compensator for loading effects of various antennas or balanced transmission line. Calibrated "S" meter. New series type noise limiter. Built-in 100 kc crystal calibrator. For 100-125 volts, 50-60 cps. 16 1/2" L x 9 7/16" H x 9 1/4" D. Shpg. wt., 35 lbs.

HQ-110-Receiver-Less clock-timer.....Net 229.00

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PL-38888-G1-Matching speaker in cabinet.....Net 14.95

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SOS Award. HAW. of Hamlin, is working on an engineering degree at K.U. with a little time for 2-meter activity. UOL, who is publishing the *Midwest Relay*, successor to *Midwest Cdz*, is doing a nice job. The Wheat Belt Amateur Radio Club is planning on a weather net and practically covers the Northwestern part of the State. The Eldorado Amateur Radio Club also is making plans for a weather net for its local bureau. Traffic: (Mar.) WFTOL 816, OHJ 686, K0BHA 404, W0FNS 294, Q0Q 268, UOL 251, ORB 180, Q0G 128, ABJ 116, K0BFX 69, W0SYZ 65, K0HVD 55, W0IFR 30, LEW 28, K0IZM 27, W0HVG 26, FDJ 24, SAF 24, K0BIX 23, W0RIF 21, UTO 17, K0LJH 15, K0WAL 15, W0ICV 12, IRE 7, K0MEF 7, W0ECD 5, K0IRL 5, W0BL 3, ITO 3. (Feb.) W0BLI 510, K0BFX 37, IRL 11, EQY 4, W0LZJ 4, VGE 4, LOW 2. (Jan.) K0IRL 7.

MISSOURI-SCM, James W. Hoover, W0GEP-Net reports: MEN; 10 sessions, QNC 343, QTC 79; NCS, BUL 1, DWX 5, OHC 4, MON; 32 sessions, 44 reports; QNI 199, QTC 100; NCS, OUD 35, GBJ 5, RTW 3, PME 1. The Heart of America Radio Club Emergency Net has been reactivated and operates on 29 Mc. at 8 p.m. each Wed. KN6LGG has been appointed NCS for the Regional Novice Net operating on 7152 kc. at 1700 each Sat. A 6-Meter Civil Defense Net in Kansas City meets on 50.640 Mc. at 8 p.m. each Mon. IGU has replaced WPS as St. Louis Area RACES Radio Officer. WPS is Deputy Chief of Communications. The Southwest Missouri Amateur Radio Club's (Springfield) roster shows 41 members. Members of the St. Louis Amateur Radio Club demonstrated amateur radio ability in emergency communications to a group of 175 Explorer Scouts. Congratulations to Ruth Vollrath, who is handicapped by blindness, on receipt of her Novice call, KN0KX, IFC, St. Louis, worked K0DWC, who was operating 6-meter aeronautical mobile at 16,000 ft. over Iowa, K1Q, Jefferson City, has been working TAF, Creve Coeur, regularly on 6 meters. CKQ worked HCLJW on 6 meters leaving only Asia for WAC. EBE has returned home after hospitalization. WAP has a new Ranger and electronic tr. switch and is enjoying the full break-in operation. KN6LRG has a new SX-90 and a Globe Chief. EPI has a new HQ-110. BVL attended the IRE Convention in New York. Traffic: (Mar.) W0CPI 1211, GAR 528, GBJ 290, BVL 236, VVU 143, K0LNG 130, W0KIK 124, OUD 92, K0BHY 78, HHQ 61, W0IIR 58, PME 55, OVV 55, RTW 40, HUI 39, K0LWX 35, W0KA 32, CKQ 22, VZB 15, WAP 14, WFF 14, BUL 13, K0DEQ 7, W0FIN 7, GEP 7, KNAJPH 7, LGZ 6, ONK 6, W0WYJ 6, KN6LRG 5, W0EBE 3. (Feb.) W0WFF 48, K0LWX 24.

NEBRASKA-SCM, Charles E. McNeel, W0EXP-DDT reports the Nebraska C.W. Net had 31 sessions with QNI 334, QTC 145 and 20 stations on roll call. MAO reports the Nebraska 75-Meter Phone Net had QNI 599, QTC 62 with YCY back on roll, making a total of 37 members. The Nebraska Slow-Speed Net reports QNI 260, QTC 110, 100 per cent QNI K0HVG. K0CBV handled Burlington traffic with NHT during the steel storm when the wires were down. MOI is operating on 10 and 15 meters. AOQ is on RTTY with a new machine. The SCO Radio Club, QRK pres, meets the last Wed. of each month. DQN has moved from Potter to Steamboat Springs, Colo., and will be on 75 meters looking for the Nebraska gang. The Western Nebraska Net, NIK as NC, reports QNI 624, QTC 91 100 per cent QNI BMQ, NIK, K0LFJ and K0LTR. The Morning Phone Net, daily at 0730, had 31 sessions, QNI 537, QTC 100, 100 per cent QNI K0DGV, K0BDE, K0HKI, LPJ, SCT, SPK, VZJ and NIK, with 30 stations on roll call as of Mar. 31. K0DGV is operating a new Globe Champ. SSB is on with a new Viking. Traffic: W0DDT 209, MAO 149, K0DGV 120, W0ZJF 101, K0BDF 64, W0NIK 37, VZJ 47, K0KUA 41, W0ZOU 35, KDW 34, OCU 29, LXS 26, OKO 22, SPK 22, K0HKI 19, W0VEA 18, EGQ 16, IFJ 12, OOX 11, K0CDG/6, W0RIN 9, PDJ 8, PUT 8, URG 8, K0CMP 7, W0DQV 7, K0ELQ 7, ELU 7, FDB 7, IFJ 7, LTR 7, W0QHE 7, BOQ 6, HOP 6, NUS 6, LJO 5, QKR 5, AFG 3, CHI 3, EFV 3, K0CYN 2, HAV 2, W0JO 2, KLB 2, MTI 2. (Feb.) W0SQE 151.

NEW ENGLAND DIVISION

CONNECTICUT-SCM, Victor L. Crawford, WITYQ -The Mayor and City Council of Torrington attended the official opening of the CQ AR Club house. PAM YBH reports CPN handled 375 messages during 81 sessions with an average daily attendance of 23. High QNI goes to DHP, YBH and KIBEN with 31 each. H1D 20, TVU 20 and KIAQB 28. KN1BJU and KN1CEC dropped the "N." MDB joined the Women Radio Operators of New England and received Deep (Continued on page 130)



3-ELEMENT BEAM

no coils *at all*

3-BANDER BEAMS

2-ELEMENT BEAM

Gonset 3-Bander Beams give you outstanding performance on 3-bands ... 10, 15 and 20 meters ... operate electronically ... use no coils at all.

Even the best coil has some loss. The losses in a poor coil can be excessive. Before choosing, consider that Gonset 3-Banders do not use coils ... will give more signal for a given power ... than if coils were used.

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Electronic disconnect, essential for instant and automatic change from band to band ... is highly effective. It is accomplished without coils by special concentric elements which are part of a completely new and original Gonset antenna design.* The effectiveness of properly designed quarter wave sections as electronic disconnects is well known.

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3-Banders now use "Boots" to seal off the open-ended concentric elements from dust and moisture. These "Boots" are of the highest grade silicone rubber, have very low losses, do not absorb moisture, will not become brittle under exposure to sun and weather. They tend also to maintain element concentricity and to lessen vibration.

SET 'EM AND FORGET 'EM!

All elements are factory cut to correct length. 20 meters requires no adjustments. 10 meters has fixed-length parasitic elements, requires adjustment only on the driven element. 15 has adjusting sleeves on driven and parasitic elements. Adjustments are made on the ground by short, sturdy tuning sleeves which are permanently clamped after setting to specified position. You set 'em and forget 'em.

2-element, #3219-B 84.50

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Dielectric losses are greatly minimized by a design that eliminates coil forms and other large dielectric masses ... uses only widely separated low-loss rings to maintain concentric element spacing.

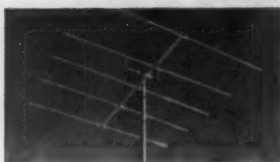
GAIN...VSWR...FRONT-TO-BACK RATIO...WEIGHT...FEED.

FORWARD GAIN, (typical)
3-ELEMENT: 10 meters, 8.4 db, 15 meters, 8.1 db, 20 meters, 8.2 db.
2-ELEMENT: 10 meters, 5.3 db, 15 meters, 4.9 db, 20 meters, 5.0 db.
VSWR (typical) either beam: Not more than 1.4 to 1 across phone or C.W. band segments at heights greater than 35 feet.
FRONT TO BACK RATIO, 3-element, 24-28 db, 2-element, 14-18 db.
WEIGHT: 3-element, 65 pounds, 2-element, 35 pounds.
FEED: Both beams are fed with single RG8/U cable.

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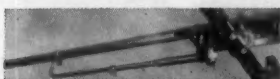


**6 METER
8 ELEMENT**

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6 METER, 8 ELEMENT BEAM: \$24.95

The hy-gain 6-meter beams are adjustable for max. gain over the entire band, from our instructions. No further tuning necessary. Calibration Chart supplied with each instruction manual. Factory preassembled, these beams feature heavy wall ½" aluminum elements of 6061T6 alloy and 1¼" diameter aluminum booms. May be stacked for additional gain. Stacking Bars available at \$3.95 extra.



New, precalibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed incl. Developed exclusively by hy-gain for use in the hy-gain single-band beams.



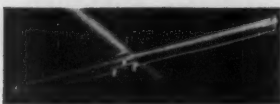
**2 METER
5 ELEMENT**

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1½ METER, 10 ELEMENT BEAM: \$9.95

2 METER, 10 ELEMENT BEAM: \$10.95

The hy-gain 1½ & 2 Meter Beams are factory preassembled; elements snap into position for immediate use. Features ½" aluminum elements of 6061T6 alloy & 1" diameter aluminum booms. Easy to put up and into operation, these beams may be stacked for additional gain. Stacking bars available at \$3.95 extra.



The 1½ & 2 meter beams incorporate the Folded Ratio Dipole with nominal impedance of 450 ohms. A 1:1 SWR with 450 ohm open wire transmission lines for max. efficiency at VHF frequencies may be realized.

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Sea Dragnet Certificate No. 86. IRX, GVK and EJH joined MARS. DHP received a TCPN certificate and joined the Mansfield Volunteer Fire Co. to help coordinate the radio net. MWB got KC4AF on 14 Mc. with a new 240-ft. antenna. KN1BHM got his Tech. Class license. EXO in Torrington, GTG in Hamden and KKK in Meriden are new on CPN. KIBEN is transmitting Official Bulletins daily on 3900 kc. at 1200 EST. TCW has a new 73A-4. KNEJS is a new Novice in Torrington. JLL has a new HT-32 and SX-101. The CQ ARC had QNI of 69 during four net sessions with traffic handled totaling 10. New officers at YU are 9BAO, NRI and K2HZL. EFW has eliminated his transmitter trouble. The CVN handled 39 messages during 13 sessions with an average attendance of 10. High QNI goes to FHP, KIBML, KN1BMM, FFF, K1CJJ and KN1DDY. New stations on CVN are NLC, WHR, EJH, IPX, KN1EDC and KN1DDO. New officers of the Stratford ARC are RFJ, KZX, SBR and ZNA. KIDEB is a new General Class licensee in Bristol. RM KYQ reports 357 messages handled during 26 sessions on CN including 62 on the second session. KIBML and KN1BMM have a new Globe Scout 680 and a three-element 15-meter beam. IKB and WKW made DXCC the same time on the same day. The Connecticut 6-Meter Net moved 20 pieces of traffic during five sessions with an average attendance of 15. New appointments: KIBEN as OBS, VWP as OES, FSE as Windsor EC. Appointments renewed: KYQ as RM; AVS, GVK and KYQ as ORS; LIG as OPS; FDJ, TCW and WX as ECs. Traffic: (Mar.) W1YBH 547, KYQ 356, KIAQB 316, W1AW 283, FYF 261, KIBEN 228, W1TYQ 236, EFW 235, KKK 159, CUH 134, GVK 126, MWB 114, MGT 110, NJM 104, DHP 47, ULY 47, YL 45, BDI 43, RFJ 41, FCE 31, QJM 30, LY 25, GTG 18, MDB 16, VTY 17, GJV 13, OBR 11, EJH 9, K1BFJ 8, W1KAM 7, KIBML 6, KN1BMM 6, W1ECH 6, KN1BHM 5, W1FVV 4, PFF 3, AMY 2, AVS 2, EXO 1, HQM 1. (Feb.) WINJM 79, OBR 5.

MAINE—SCM. John Fearon, WILKP—SEC: QJA, PAM: VYA, PAM V.H.F.: JMN, RM: EFR. Traffic nets: The Sea Gull Net meets on 3940 kc. Mon.-Sat. at 1700; the Pine Tree Net on 3596 kc. Mon.-Fri. at 1900; the Barnyard Net on 3960 kc. Mon.-Sat. at 0800. New appointments: GPV as ORS, LWO as EC. Renewals: LWO and KIAKO as OPS, LWO as ORS. An Andros-coggin River Flood Net is being planned with stations in Berlin, Rumford, Livermore Falls and Lewiston. The Lobster Net on 2 meters is expanding, with HQZ1 on Mt. Washington as a relay. JMN is using an inverted "V" antenna on 75 meters. WAS may be heard occasionally on 2-meter RTTY. The St. John Valley Hamfest was held in Presque Isle Apr. 12. MJY is on the air from St. Agatha using a Globe Chief and an SX-28. The Sheepscot Valley Radio Club gives code practice Mon.-Fri. at 1900 on 3737 kc. KIBLL is the call at Crosby High School, Belfast. PXE lost his 10-meter beam. FV is building a 50-watt portable rig for the summer. JIS is back at Gardiner. VY3 is installing a new heating system for his shack. KIGAV is a new ham in Madawaska. KIDVN and AGP are new mobiles in Bangor. DLC lost his 20-meter beam and missed his first DX Contest in many years. 2PRW and ZRH are now ICOP and KIGVX, respectively, in Scarborough. BTR, KIAOQ and AND have DX100s. KIBQT is putting out a good signal with his Viking II. EOP and LWO are ECs for Calais and Waterville. KN1GKP and GKW are new Novices in Boothbay Harbor. FNI now has WAS. K1CYJ, AKO and KN1DYG have joined the AREC. Traffic: (Mar.) WILKP 191, IHN 99, QJA 63, CEV 59, KIAKO 44, W1EFR 35, GYJ 25, HYD 24, JMN 18, UDD 18, FVE 16, TGW 15, FV 14, BX 13, KIDVN 11, W1GPY 11, KIBX1/1 10, ANM 9, WILXA 8, OTQ 8, LWO 7, K1BYE 6, W1ZK 5, KIBQT 3, BAY 1, BAZ 1. (Feb.) WIBX 11.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: DBY Chelmsford, SPL RO for Sector I-D as ECs; KIAGB as OES, NTK and FRR as OPS and ORS; MIX as ORS; UBC as OO. KIGAY is the Bedford Club's call. KIGFR is "Swede" Langston of our M.C.D.A. KN1GNN is PF's son. KIDYC is KIDJX's daughter. Congrats to EUT on winning the Mass. QSO Contest Trophy. UC, JSS, SEA, OGG, PCO, FEY and KIDIE are on 75 meters. EEE, LZW and VRV are on 10 meters. IFR, LVE, OIH, SIV, KICLO, KN1s GVR, EFU, EFT, KIAIU and AIQ, are on 2 meters. The Federation of Eastern Mass. Clubs held a meeting. South Shore Club held a meeting. GDJ is on 15 meters with an 813. OOP spoke on NC-62 v.f.o. at the GBARS. EUJ, FJJ and AQE lost their antennas in an ice storm. The Framingham Club had an auction. 4VQZ, MX secy., writes the club has a new rig and antennas. KN1BZQ has a Globe Scout. MEG has

(Continued on page 132)

1958 EDITION

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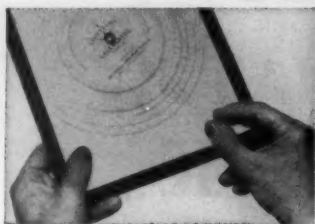
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new rig, a pair of 813s. KIDUT, Lakeville, is on several bands. The 6-Meter Cross Band Net is very active. New calls in New Bedford are KN1s EDS, EDR, GGU, GHB, ECO, EJX, GLX, EGY and EGU. KN1DIY has his Tech. Class license. The SEMARA visited the Fall River Club. EUT is on 20 meters. KN1s DUB, DWR, DWN and DYZ are on 2 meters in Winchester. WU is putting up his mast. The Sharon ARA is a new club. RCQ handled emergency information with EL2S regarding a hospital patient in Boston. HIL is ready for high power on 6 and 2 meters. MIX used to be a Navy radioman. BGW went to the RTTY dinner in N. Y. and the IRE Show. AKN is working with NX in Bourne. C. D. DPO is holding weekly classes for RACES operators. JMA spoke at the Braintree Club on the HC-21 frequency meter. ZEN had an operation. ZEN, UKO and JSS have All-Conn. Awards. The T-9 Club met at Kennedy's in Danvers. QRA had ICP speak at a meeting. KIAGB will have quite a set-up for 220, 144 and 30 Mc. MX has a new paper, Sparks & Arca. TZ has his Tempco transmitter back on the air. We are sorry to have to announce the death of ex-1IHE, Don Ingalls. AHE lost part of his 24-element beam in a storm. Appointments endorsed: SPL, FHJ and BCN as ORSs; RCQ, FJJ and SMO as ORSs; AR and HIL as OPSs; HKG Malden, BCN Hyannis, SHV Lynn, AR, Belmont, AKN Sandwich, DWY Beverly, KT Georgetown and DDC Ayer as ECs. DDC is active on many bands and building rigs and gadgets. The Concord High School RC, RNV, will be on with a DX-100 and a Super-Pro. WLP is a Town Member in Winthrop. Ex-1MSH is 4PNU in Florida. LMZ will be on 6 meters with a 2E26 rig. The Mass. State Phone Net, on 3870 kc. at 1800, still is active. We understand that QVK is the new Radio Officer for Sector 1-C. NJP is RO for North Easton. RUU will be on 2 but has been on 10 meters mostly. AJU is leaving our section and going to Florida or California. DIY helped DMD get back on the air. KIBUF is back on the air. 2ADE visited up this way. Traffic: (Mar.) WIEMG 416, FJJ 189, AWA 135, EAE 128, CZW 100, EUT 94, DIY 68, UKO 63, AUQ 62, KN1DIO 38, WITY 34, UIR 33, KIDGI 26, IBE 20, WIATX 14, LMZ 12, WU 10, KIBYL 9, WION 9, JRD 9, NTK 9, AHP 8, RCQ 8, KIATO 7, WISMO 6, HIL 5, TZ 5, AKN 4, DTH 4, BQP 4, MIX 4, MX 4, BGW 3, BY 2, KIDGG 1. (Feb.) WIDFO 12.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKearghan, WIHRV—Acting SEC: HRV, RM: BVR, PAM: MNG. The West Mass. C.W. Net on 3560 kc. is doing a fine job with several new calls heard recently. The Mass. Phone Net on 3570 kc. also is doing well with good coverage from both sections of the State. DZV has been appointed OBS. UEQ made BPL again. 4UWA/1 has been transferred to New Jersey. He expects to be shipped to Germany in June and looks forward to getting on the air with a DL4 call. New calls in the Fitchburg Area are KN1s GFZ and GGA, both YLs. New Novices in the Pittsfield Area are KN1s GFT and GHR. JYH has made WAZ and has 250 contacts confirmed. He also made a very high score in the DX contest with 555 contacts and a 280 multiplier. A good-sized group of v.h.f. men from the Springfield Area attended the annual V.H.F. Dinner in Hartford. The Berkshire County Assn. had a fine talk by CUT, of ARRL, at its March meeting. We are sorry to hear that ZEO will be leaving the section. He did a fine job as EC for North Adams and was one of the big wheels of the Hoosac Valley Radio Club. The Pioneer Valley Club of Holyoke recently voted to affiliate with ARRL. The Hampden County Assn. members learned a lot about crystals from Mr. Lewis of the E. B. Lewis Co., East Hartford, at the April meeting. The HCARA took third place in the national scoring for the January V.H.F. Contest. DKY has his new 6N2 working FB on 6 meters. JYH recently had a visit from 6BIF, a contest pal, and before the afternoon was over a regular gabfest was in progress with a number of hams from the W. Mass. Area and Connecticut gathered at the JYH shack. Traffic: (Mar.) WIUEQ 1226, KGJ 110, BVR 72, TAY 69, DZV 48, DGL 7, AGM 6, JYH 4.

NEW HAMPSHIRE—SCM, John A. Knapp, W1ALJ—SEC: BXU, RMs: CRW and COC, PAM: CDX, V.H.F. PAM: TA. GSPN meets at 1900 Mon. through Fri. on 3842 kc. and at 0900 Sun.; NHN, Traffic Net, 1900 Mon. through Fri., 3683 kc., N. H. State RACES Net (BXU as NCS), 1300 Sun., 3993 kc. Thanks to QKA, Nashua M. and K. Cub. trans. for the FB activities report of club members. BXM is building a 500-watt 2-meter final and has a new DX-100. KICOY is now General Class. RYD has a new Valiant on 20- and 75-meter sideband. Congrats to WBM and his new XYL. NZZ, EOW and KN1GDZ took awards for dis-

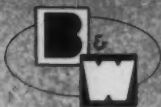
(Continued on page 134)

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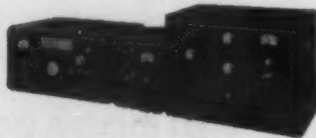
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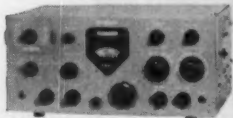
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plays at the Laconia High Science Fair. MXT and KNIABM had exhibits at the Concord High Science Fair. KIBCS presented a ham activities program to the Franklin Kiwanis Club in March. YHI has a new three-element 10- and 15-meter beams. The North East V.H.F. Net is operating nightly on 145.20 Mc. New appointments: VAU, VBX and MEL as OOs; MEL as OBS. Endorsements: FUA as ORS; DYE as OPS. OO and ORS. BPLs go to KNIGDZ, EOW and KIBCS. Traffic: (Mar.) KIBCS 528, WIARR 95, HKA 93, ENM 63, GMH 52, MOI 52, KVG 37, YMJ 34, IIQ 10, EVN 9, FZ 4, CUE 2. (Feb.) KIBCS 970, WIEOW 107, HKA 105, KIBIP 20.

RHODE ISLAND—SCM. Mrs. June R. Burkett, WIVXC—SEC. PAZ, PAMs: KCS and YRC. RMs: BBN and BTV. LSP has been appointed ORS. Endorsements include KIABR as OBS and BTV as RM, EC and ORS. VBR has been awarded a Section Net certificate. PAZ, YRC, KCS, BTV, BBN and VXC spoke to the group of 12 ECs, 4 OPSs, 4OESs, 3 OBSs, 5 ORSs, and 3 OOs in attendance at an Informal Discussion Meeting held Mar. 19 in East Providence. FII will return home from Europe about the middle of July. AYJ is on the air at DL4ADV and is looking for his R. I. friends on 20, 15 and 10 meters. HKN is building a kw. final for his Ranger. KIAOS has built a 6-meter converter taken from the Handbook. KIAOR has added Ohio and North Carolina on 2 meters. AFN was a guest of the BVARC on Mar. 28. The PRA had an excellent turnout at its auction Mar. 11. K6KYJ wants a schedule with any R. I. station. ZPG, CEW and WVN attended a dinner which was given for the personnel who have returned from Operation Deep Freeze II and report that this group really appreciates the operating done in its behalf by the American amateur radio operators. Traffic: (Mar.) WIYRC 113, VBR 75, TXL 45, HKN 41, BBN 24, YKQ 19, DDD 12, WED 7, KIAOS 4.

VERMONT—SCM. Mrs. Ann L. Chandler, WIOAK—SEC. EIB. RM: BNV. PAM: ZYZ. V.H.F. PAMs: FMK and TBG. New appointments: JG as Lamoille County EC. Appointments endorsed: KRV as ORS and ZJL as OPS. BXT has made his third BPL in a row. VTN held 34 sessions handling 71 messages. Top QNI go to JI 24, GQJ 21, KIBGC 21, ELJ 18. VTPN had good state representation clearing all traffic. A total of 240 messages were handled on GMN. NWW is running 100 watts on 50 Mc. with a fine signal. KKM is back on the air. MH enjoyed his trip to Mexico. KIBOL has a new GP-104 mike and Knight VFO. On 3.5 Mc. KIBKH is using a DX-100, a Knight VFO and an S-40 receiver. New Conditional Class licenses were issued to NXB and KIBSU. New Novices: GKG and GGL in the Burlington area and CYZ in North Westminster. VE2LI visited MMN and OAK. Traffic: (Mar.) WIBXT 741, OAK 187, JI 24, KRV 98, BNV 60, KIBGC 43, WIEB 40, KJG 35, ELJ 34, LMI 15, AD 14, KICYY 11, WIVMC 9, ZJL 4. (Feb.) WIKRV 110, BNV 51.

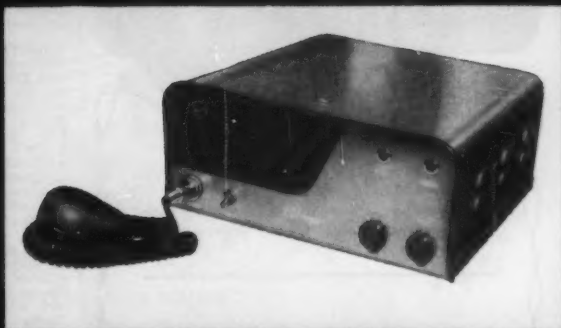
NORTHWESTERN DIVISION

ALASKA—SCM. Eugene N. Berato, KL7DZ—The Kodiak Amateur Radio Club elected BMZ as president. The club is now an ARRL affiliate. Plans are being laid for a very active Field Day program. DG reports from Adak: BEM is building a kw. final. ALU has erected a cubical quad, DG is bringing his Sonar 120 back to Kodiak with him. S.a.b. is very popular in the Kodiak and Aleutian Areas with ALU, EX, BUF, BDK, BEM and BDD very active on this mode. AWR is acquiring a new HT-32. KN6CCO is the first Novice on Adak. CKT has a new Champion 300 and his XYL is studying to be the first YL ham on Adak. W3UYN/KL7 and W1WCC/KL7 are on at ALZ with s.a.b. CVDV has a new all-band vertical that can take the williwags. The EARS (Eskimo Amateur Radio Society) at Fort Richardson elected BRU, pres.; CKB, adm. vice-pres.; W3JDU/KL7, tech. vice-pres.; Ernie Moody, secy.-treas. WSUW/KL7 got the first thunderbolt in town, CDG reports little or no 6-meter activity for the month. CIX has a new 6-meter Communicator. Traffic: (Mar.) KL7BJD 218, ALZ 57, CDF 23.

IDAHO—SCM. Rev. Francis A. Peterson, W7RKL—OCR is trying hard to get surplus material available for all RACES members. Sign up now with him. Ham Hill News carries the lists of items. PIT is making a regular newspaper out of the *Hambone*. RKI visited DPD, EF, OCR, GRU, AXV, BBS, HOV and UBC right after Easter. DPD has a new inverted "V" antenna for 75 meters. EF and VQC had rig trouble again. C.d. groups are planned for Moscow and Lewiston. EEQ, Helen, is the new FARM Net NCS and CZW is manager. Thanks to WNR for an FB job.

(Continued on page 136)

CIRCUIT BY

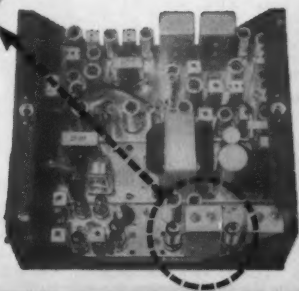


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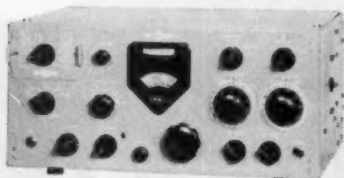
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IBC has 300 watts c.w. at Malad, GOX, at Moscow, has a ban on antennas. CPY spoke to the Pocostello club recently. The club has a new call, DAX, with a DX-40 and an NC-100. New Novices and mobiles abound. SKP's mobile went dead on his visit there. CDA is planning a new TV station. Let's clean up the sloppy operating between 75 and 2 meters and improve operating standards before the FCC mobile unit monitors your area. More friendly Official Observers are needed. Traffic: (Mar.) W7VQC 32, EEQ 28.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WX1—SEC: KUH, PAM: EOI, RM: KGJ. The Montana Phone Net meets Mon.-Wed.-Fri. at 1730 MST on 3910 kc. The Missoula Area Emergency Net meets at 0900 Sun. on 3890 kc. K7AVJ, W7BJT, KN7DAD and W7EMI were prize-winners at the Billings Science Fair. New calls: KN7BND at Livingston; KN7CPJ, K7CWT and KN7CZM at Billings; KN7CZQ at Logan; KN7DAD at Ryegate. K7ARX moved from Livingston to Casper, Wyo. K7BPF moved from Roundup to Plentywood. OIQ moved from Bozeman to Great Falls. New officers of the Old Faithful Radio Club are Pete Langdorf, pres.; KN7CHA, vice-pres.; RZY, secy.-treas.; and Bill Zinger, act. mgr. The Harlo Ham Picnic will be held June 8 in Wheatland County Park at Harlowton. The 24th Annual Glacier Park Hamfest will be held July 19-20 at Agate Camp Grounds in Glacier National Park. The 20th Annual W.L.M.U. Hamfest will be held Aug. 2-3 at Big Springs, Idaho. Traffic: (Mar.) W7MM 78, SFX 49, TYN 26, TVX 23, OOG 12, NPV 8, COH 7, K7BVO 5, AXD 2, W7BKB 2, JFR 2, CQC 1, EWR 1, TGM 1. (Feb.) W7MM 96, FIS 12.

OREGON—SCM, Hubert R. McNally W7JDX—YUY now is operating full break-in. OMO is working hard for his 30-w.p.m. sticker. A new 6-meter net in Portland is operating on 50.55 Mc. and meets each Sun. at 2000 PST. Anyone hearing them, give them a voice break and check-in. The Portland ARC is working on the 6-meter RACES Net along with the conversion of ARC-3s for use on 6 meters. We regret to announce the passing of JQQ, of Portland, who received many write-ups on his v.h.f. work with model planes, lawn mowers, etc. SUX has a new Communicator III. LT rendered help to friends in Alaska. QYS is Globe Kinging again after serious transformer trouble. QWE still is trying to complete WAS, YL and XYL scores. ENU announces the arrival of a 9-lb. baby boy. JLU is a new OBS. YG renewed as OBS. The OSN had a good month in March in spite of good weather, with AJN, OMO, BVH and ZFH making BRAT. LVN has a new baby daughter. The Dulles ARC's new officers are SNA, pres.; BZC, vice-pres.; AIZ, secy. The Astoria ARC's new officers are THX, pres.; HQL, vice-pres.; EUC, secy. QSL Mgr. AGS, of Salem, had a session in the hospital at Boise, Idaho but is better now. Traffic: (Mar.) W1APF 844, CUW 84, AJN 32, OMO 51, LT 35, ZFH 31, BVH 29, SUX 29, YUY 22, SPB 21, JDX 18, GAJ 16, YG 4. (Feb.) W1QWE 37, VBH 18, QYS 14.

WASHINGTON—SCM, Victor S. Gish, W7FIX—This is the last report of your present SCM. Thanks to all of you who have been so good about submitting reports regularly—it helps to make the job easier. At this writing ballots are now out for you to vote for either OE or PGY for your new SCM. AIB is continuing with his efforts to get all of the WSN to take ORS appointments. AMC is checking in on WSN regularly. BXH is using a BC-474 and getting FB reports. LYB is thinking of putting up a vertical for 90 meters. GJS is a new WSN member from Moses Lake. FZQ is slacking off on traffic and at present is busy trying to keep the car going. CWN still has projects in the fire and reports some traffic for a change. GVV reports there will be no activity until mid-summer. JEY has about finished with school and should be back in Salkum when you read this. NWP now is using a DX-40—also reports an ulcer. Any connection between the two? RGL is sending OBS on 2700 kc. at 1830 PST Tue., Thurs. and Sun. WNTXE passed the Tech. Class exam. AVM is trying to get the Aberdeen gang to go in for ORS/OPS appointments. The Valley ARC reports new officers are UZE, pres.; ZMG, vice-pres.; K7AFU, treas.; ISM, secy. OEB will handle the Field Day activity this year. HUT now has a 75-meter antenna up. The Clark County ARC held a hamfest on Mar. 7 with 133 attending. Traffic: W7BA 1701, PGY 504, KWAT 279, W7DZX 41, AIB 86, AFS 72, AMC 60, WGD 61, QLH 45, WVU 40, BXH 29, LYB 23, CTO 18, GJS 15, HUT 13, FZQ 6, CWN 5, GVV 5, JEY 4, NWP 2, RGL 1.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—
(Continued on page 138)

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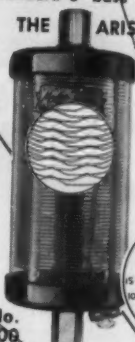
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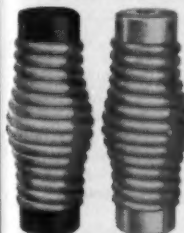
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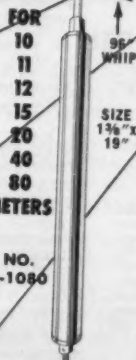
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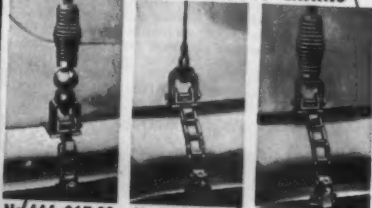
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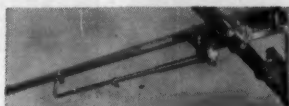
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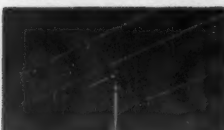
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10M - 3 ELEMENTS



18 lbs.
Boom Length: 104"
Longest Element: 17'10"

\$21⁹⁵

15M - 3 ELEMENTS



30 lbs.
Boom Length: 142"
Longest Element: 23'10"

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20M - 3 ELEMENTS



48 lbs.
Boom Length: 212"
Longest Element: 35'9"

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Carefully engineered, incorporating the latest design principles for top performance, the hy-gain monobanders are factory pre-tuned and pre-matched. Complete with easy-to-follow instructions for assembly, these beams sold with 1 year guarantee. Features include large diameter elements and ruggedly built Boom/Mast clamps. Booms hot dipped galvanized steel for max. strength with minimum wind resistance. Elements 6061T6 alloy. Extremely simple to put up and into operation.

Average Gain: 8½ db. Average F/B Ratio: 24 db.

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Don't forget the ham convention to be held on Kauai this year, July 4, 5 and 6 are the dates and it will be sponsored by the newly-received Kauai Ham Club. AAJ, AWG, AYG, CKO and KS have received their RACES licenses. The Islands still are not represented in RN6. How about some traffic man contacting your SCM and getting us into the national picture? KW6CQ is the latest call assigned on Wake Island, but KH6AZM has moved there and has applied for a KW6 call. Since your SCM spent a month on Wake Island, there will be no traffic reports this month. Any that were sent in will be reported next month.

NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU. Activities still are going strong in the Reno Area with good attendance at club meetings and hidden transmitter hunts. BJY reports the issuance of certificate No. 53 to CRT for 25 Nevada contacts and endorsement No. 8 to AZF for 50 Nevada contacts. A visitor to the March NARA meeting was HS1B, Al Williams, from Thailand, who will be looking for the gang on his return home. Watch for him on 10 meters. ZHW, now a.s.b. with a new Pacemaker, is hoping this is the answer to TVI. TQE handled emergency traffic over the Red Cross Net during the heat and smog. Traffic was handled between Reno and Echo Summit, Calif., the site of some nine stalled Greyhound buses. TQE, a man of many talents, is assisting Mrs. Cottam, one of the teachers at Northside School, in conducting code classes for potential Novices. Be prepared, Field Day is around the corner.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—SEC: NVO. RMs: ZRJ and QMO. K6YKG is a new ORS. Endorsements: YHM and ZRJ as ORS; JCG and RLB as OES; OFJ, QEJ, VCZ, VQK and ZWE as ECs; ZRJ as OQ. Section net certificates were issued to PLG, K6YKG and K6SRC. The SCCARA will hold meetings the 2nd Mon. of each month in the c.d. room of the new City of San Jose Police Communications Building in the Rosa Street Civic Center. K6VJI lost his beam and tower in a wind storm but both have been replaced. K6BMP, K6TWW and K6BBD will operate portable under an XE1 call from San Felipe, Baja California, furnishing communication for those on the San Jose State College Natural Science Field Trip. K6OTR, K6VOT and WVI have formed the South County Amateur Radio Service. DEF has joined NCN for traffic work. RSY is working at Lockheed MSD as an electrical technician. K6HGV reports that MTN has ten new members in locations needing traffic outlets. HJP is stationed in Washington, D. C. K6GZ is looking for RTTY station-ers for traffic work. K6LSG has been having trouble with the receiver. YHM added a cascode preamplifier on the 2-meter receiver. K6EWY is making a test with high-speed tape transmission of traffic to the East Coast at 70-100 w.p.m. QMO is looking for a 2½-kw. generator for emergency power. ZLO was visited by 4PNJ/3, ex/6LFB, Traffic: (Mar.) K6GZ 336, W6PLG 267, QMO 260, RSY 226, K6EWY 210, W6BPT 177, K6GID 118, W6HC 96, YBV 76, K6DHO 50, W6OII 37, ZLO 34, YHM 20, AIT 28, DEF 26, FON 23, ZRJ 20, K6HGV 11, OTR 9, W6MMG 3, K6VJI 2. (Feb.) W6FON 20.

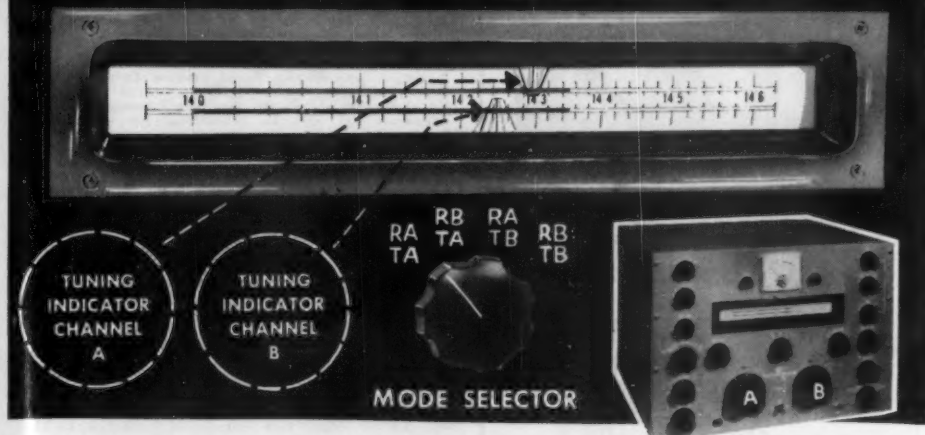
EAST BAY—SCM, B. W. Southwell, W6OJW—SEC: CAN, ECs: LGW, ZZF, IUZ, K6BYQ, EDN, GXU, JNW and JSS. K6UHE is building an a.m.-f.m. tuner with 10-watt amplifier. K6DMI is Asst. EC for the Richmond Area. AKB is over the 60 country mark with a new beam. QPY is liaison for NCN to RN6. K6KFF is running RTTY Official Bulletins on 50.9 Mc. The Richmond ARC hosted the March CRCR meeting. Congrats to ZVI and MJY on making WAZ. K6AXN is experimenting on 432 and 1296 Mc. and worked OJB in Sacramento on 1296. The EBRC had an FB meeting Mar. 14 at Cornell School. KH6ER is keeping in touch with his XYL via BSY and KH6ADK. ELP has a new 7-Mc. doubler. The Skyriders Net meets each Tue. on 23.588 kc. at 8 p.m. FDJ, past SCM, is the new president of the ORC. The HARC has 53 enrolled in its Novice class. OAX has a new Hy-Gain vertical. The XYL of K6YAF had a bad auto accident, but is now out of the hospital. The NCN has five new members. The MDARC heard a talk on the problems of 6-meter TVI, followed by an auction. K6ZBL is a new check-in to NCN. K6ZNH's dad and brother took the Novice Class exams and the calls KN6OLC and KN6OAN. K6POU is warming up a 522 on 3 meters. K6QXY and K6JPR are on 430 Mc. with 25 watts. The best DX is 50 feet! K6OGT and K6JPR are converting BC-645s for 430 Mc. LGS and FPS are new Tech. Class calls. Don't forget the East Bay Section V.H.F. Sweepstakes May 31-June 2. For further information see your EC or write the SCM. It is with regret we record the passing of JZ, former Pacific Division Director. Ray also was a past SCM of East Bay. K6DMW has a DX-35 and an HQ-129X and is Albany's mainstay on NCN. K6GK is modifying a

(Continued on page 149)

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- Operates on 10, 11, 15, 20, 40 and 80 meter bands.
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- Meter Indication for R.F. output, final Grid or Plate current and receiver signal strength.
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3. Set tune selector switch to RA TB. The same tuning procedure applies as to Mode 2 except channel A and channel B are now reversed.
4. Set tune selector switch to RB TB. The same tuning procedure applies as to Mode 1, except you are now transceiving on the channel B frequency.

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522 for the 2-meter net. K6OSO received his 20-w.p.m. sheepskin. KN6QNZ is a new Novice in Berkeley. K6GK made BPL for February and March. K4ZMA visited NZ. K6ZBL has 50 counties for WACC and 28 states for WAS and runs RTTY on 6 and 2 meters. K6QHC is pushing 813 to a kw. and 105 counties. There are several appointments open within the section, including PAM and RM status. Contact your SCM for the appointment desired. Keep those reports coming in. The more the better. Traffic: (Mar.) K6GK 545, DMW 101, O8O 38, W6JOH 20, K6ZBL 16, QHC 7, UHE 2. (Feb.) K6GK 715.

SAN FRANCISCO—SCM, Fred H. Laubscher, W6OPL—The report this month consists of activities by numerous operators who had their respective stations in readiness for any possible civil emergency during the heavy rains threatening the lives and properties of families throughout the State of California. Congratulations go to the northern area of this section; namely, the tri-county emergency drills which are held each Sun. at 1030 on 3720 kc. GQY, as usual, pounded brass to the tune of a 609 traffic count. A station activity report was received from SLX, in Eureka, who states that WSP/2 has moved to Eureka. Ed also tells us that the telephone company with its microwave did such an outstanding job during the heavy rains this year that it was not necessary for us to carry the emergency traffic load. Those of us who remember the California flood of '35 can truly appreciate the tremendous progress the phone company has made since this time. K6UFE has been handling traffic on NCN, along with liaison to RN6 and NCS for RN6. We never fail to receive a station activity report from GQA. Your SCM would appreciate a post card from you. I'd like to know what you are doing so as to let the rest of the gang share it with you. Top honors this month go to AWT, CZQ, GQK, K6CWS, SFO, LTX and CHL on their outstanding contribution to ham radio by helping to remind us of paragraph 12.133 of the FCC Rules and Regulations. Anyone receiving a specially designed QSL from any of these fellows will appreciate the labor involved. FB work, fellows! The fraternity needs and appreciates this constructive information. Traffic: W6GQY 609, K6UFE 119, W6OPL 12, GQA 5.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—Mark your calendar now for the ARRL Pacific Division Convention which is to be held in Fresno June 7 and 8. Address all inquiries to the Fresno Amateur Radio Club, P. O. Box 783, Fresno, Calif. The Radio Amateur Mobile Society, Inc., now has over 100 active mobile members. Many thanks to BLW, who took it upon himself to submit a report from Oroville. If your town or area is not mentioned herein, submit a report to your SCM. K6ZNM and K6ZWI are new calls, having dropped the "N." K6ZWI had an FB QSO in a round table of 10, each in a different zone, within 30 minutes. SLV is on the road to recovery. The ink on the license of Mabel, K6JQJ, is not yet dry but she became very popular during her first QSO. She is the XYL of DVD. Welcome to KN6LPE. We understand that K6LGU now gets "T-9" reports from everyone. We have two new "Generals." K6YLT and K6YLS. SIA and K6RFT stacked up a few in the DX Contest. Oh yes, KN6LPE has a traffic count of 1! New AREC members: KN6LPE, K6RDE, KN6HGG and K6GL. K6YBV is a new ORS. JDN is the new Dunsmuir EC. K6BYS is the new Chico EC. Welcome to PIV, who has returned as an OES. Thanks to K6DEO for the EC report. Traffic: (Mar.) K6YBV 148, K6RPQ 8, KN6LPE 1, K6YVY 1.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—SEC: EBL. EC: K6BGO. Don't forget the ARRL Pacific Division Convention to be held in Fresno June 7-8, 1958. The Hotel Californian will be the headquarters, with activities at the Memorial Auditorium. The officers of the Delta Amateur Radio Club are K6AXV, pres.; RRN, vice-pres.; and K6CDB, secy-treas. ARE reports that the 2- and 6-meter station is operating in the new c.d. headquarters in Hanford. K6AZL wants it known that he is in Merced and not in Turlock, as previously reported. JUK got his W3DZZ beam up and reports fabulous reports. He also got a new SX-101. QFR got his W3DZZ beam up 60 feet and is pleased as can be. JPS has 21 states confirmed on 6 meters running 3 watts to a ground-plane antenna. NKZ passed his General Class test. K6ZCD is on 75-meter mobile with 10 watts. K6EJT is handling traffic on 20 meters. K6KYU is on 6 meters with a strong signal. K6TVU is a new ham in Corcoran. ZKH and K6VWV are working on portable 2-meter gear. KN6ANZ moved to Kansas City. The Tulare County Amateur Radio Club holds meetings in the new Court House Building basement the 1st Wed. of each month. ARC spent

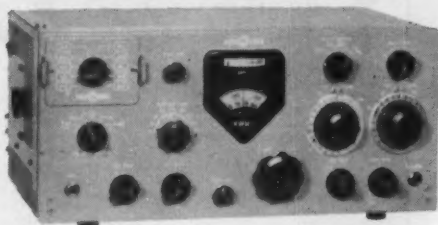
(Continued on page 142)



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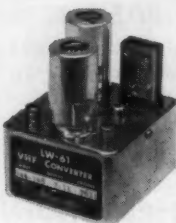
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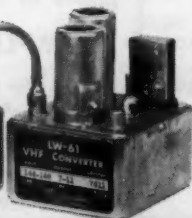
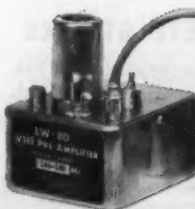
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two weeks at Treasure Island with the Navy Reserve. I need reports, fellows. See you at the Convention. Traffic: (Mar.) K6EJT 307, W6ADB 146, EBL 12, ARE 7.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, WARRH—SEC: HUL PAM; DRC, V.H.F. PAM: ACY. HUL is busy changing the procedure on the Tar Heel Emergency Net in accordance with the amendments adopted recently. The State is divided into eleven areas and a copy of the call areas has been furnished to all net members. The AREC districts have been changed to correspond with the new net areas. Some areas will have three or more Emergency Coordinators while some will have only one. The plan is to have each EC responsible for having ONE representative on the Tar Heel Emergency Net, with an area net established with the AREC on 2, 6 or 10 meters or some frequency other than 3865 kc. The key to this new process will be the EC. If he functions, then the program will be a success; if not, it is doomed to failure. ECs should give this top priority and get this done now. If you feel that you cannot go along with this, please notify HUL so he can replace you as EC. Charlotte is planning a big hamfest May 23. Asheville is tentatively planning a big one July 4-5. I get many fine bulletins from amateur radio clubs. I wish each club would write me giving the club name and officers. I would like to keep you informed via the *State Bulletin* on what is going on in the State.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—K4PJE has been appointed as SEC and YOS as PAM. AKC's RM appointment has been endorsed. The Lancaster Club, with K4OOH at the helm, listened intently to our talk and advice on c.d. and AREC, and also received much help on RACES from HJK, the director of c.d. for York Co. SOD is back on the State ready to resume activity in the AREC. Congrats to the Charleston Club on the new bulletin, *QUA—W4HHO*. K4POP and CPS can furnish details on this club's hamfest to be held May 3 and 4. FFH has one of the most elaborate station set-ups for emergencies in the State. K4KGP writes of the Cheraw Club meeting, 30 members from 5 counties, with HMG as guest speaker. HQK is hard at work with the S.C. Novice Net on 3745 kc. ZES is awaiting confirmation on WAC as DL4IX. K4ETB and DOA are busy with their Commercial Class exams. The Barnwell, N. Augusta, Aiken, Williston Ham Picnic will be held at Barnwell State Park, June 1. Officers of the Shaw—Sumter Amateur Radio Club are K4DWB, pres.; K4QVY, vice-pres.; 8ZYR, secy. K4OCU, treas. Traffic: K4BVX 188, GAT 106, W4PED 40, AKC 38, GQV 10, FM 6.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC PAK reports a very successful c.d. drill in Norfolk County. V.H.F. activity in the state is burgeoning: K4BRK is sparking a 6-meter net with participants in Va., Md., Pa., W. Va. and the District Sun. at noon. The Richmond Area 2-Meter Net meets Mon. and Wed. and now has a link with the Norfolk Area. Drills with "club saver" portables are being conducted in the Norfolk Area. K4QES says his XYL, KN4QER, earned the first Novice "Cradle of Democracy" certificate (a new award of the Lower Peninsula's Hampton Roads AREC). OES K4EYE is busy reporting the tracking of satellites to King's College. The VFV Annual Picnic officially is scheduled for June 13 at SB's farm in Fluvanna County. K2CQJ now is K4UAU at Warsaw. MG moved to Maryland and now is 3ML. We regretfully note the passing of BLE in March. LK headed for XE-Land for a few months. K4QIX reports a new long wire "coated with my blood and the XYL's tears!" AAD now has a 1-kw. s.s.b. linear final perking. K4ELG made WAS on 80 meters. CVO is chasing his Master's degree at G.W.U. while K4BY8 and K4EAQ both are too busy colleging to do any hamming. K4ORQ blames inactivity on the new poopse. K4DWP dropped in on the SCM en route home for Easter. The Richmond Club reports QSLs continue to arrive for VA-JF, 607 certificates having been issued as of Feb. 28. Traffic: K4AET 545, ELG 354, W4PFC 314, K4KNP 294, W4QDY 278, K4EZL 230, QES 225, QIX 139, W4IT 75, YVG 63, BZE 60, K4PTG 52, DSD 43, W4KX 41, SHJ 41, K4GWO 40, W4PVA 25, K4ECD 27, W4BGP 20, LA 20, CFV 25, K4MEV 19, W4AAD 18, K4DPX 16, EAS 16, WARHA 12, K4IP 11, W4LK 8, LW 8, OOL 3, CVO 3, JUJ 3. (Feb.) K4GWO 302, W4THM 105, K4ORQ 1.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Amt. SCM: Festus R. Greathouse, 8PZT, SEC: KXD. PAM: EGL, RM: GFE, HZA, PHO, VYR, V.H.F. PAM: K8AON. K8GNW is operating in Iceland at

(Continued on page 144)

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TF2WBD. EAB has slowed up on his DX because of school work. VII is working good DX with his DX-100. SSA does a fine job in editing the Black Diamond Club's bulletin. KN8GJY is doing a fine operating job. K8HRO is a new OPS and OBS on the V.H.F. Net. The 50-Mc State Net has been organized to assist the Weather Bureau in obtaining data on river conditions in the Huntington Area and at other strategic locations. K3AON is doing a fine job as V.H.F. PAM. K8CRM is active on 75 meters with 13 watts and QSOed at W6 with that power. FUM is active with the Weather Bureau Net. FNI handles 80-meter traffic for relay to the Weather Net. LBN does the same thing on the 75-Meter Phone Net. DFO is building a new rig. JNF is a new ham in Huntington. CYW has a new mobile rig. ARF is active on 6 meters as is IBB. IEQ has a new five-element 6-meter beam. K8GWT dropped the "N" from his call. NYH is very active. K8HID has a new 20-meter ground-plane antenna. Traffic: (Mar.) W8FNI 145, VYR 108, HZA 93, BWK 41, H1D 30, NYH 29, CNB 23, HRO 4, DDB 2, (Feb.) W8SNP 7, (Jan.) W8NYH 27, SNP 19.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonmore, W8DML. SEC: NIT. PAMA: CXW and IJR. OBS: K8BTU. OO: OTR and RRV. NWJ tells us that the Rocky Mountain Radio Club in Gunnison is composed of 9 active members. K8KFO is running an HU-32, an HT-33 and an SX-101. K8CEN is remodeling his shack and putting up antennas. K8MNQ, ex-1NAJ, recently moved to Thornton from W6-Land. YHL works 40-meter c.w. and 2 meters mobile. IA has been under the weather, but is doing fine now. K8GKL is running 300 watts on 6 meters. New 6-meter members are K8IYC and K8BTO. According to the R-F Carrier IQV and QEL are chairmen of the Western Slope Disaster Committee. CNM is working 2 meters. K8DCW, JCV and SAU are charter members of the DAV Amateur Radio Chapter in Colorado. Contact K8DCW for details. BWJ says VEEMF worked enough Denver stations for the Mile-Hi Award Sun. afternoon Mar. 2. K8KZY and K8AYK are perscrators and K8JCY is inkspiller for the *Splatter Chatter*. K8OOA, FCC engineer, gave a technical talk to the El Paso Radio Club. HFB recently won a set of tools for OM UPS in a contest. Traffic: (Mar.) K8BCQ 938, W8KQD 640, IA 586, WMK 401, K8DXF 190, DCW 154, W8QOT 131, K8DOC 96, W8WNU 65, K8KZL 40, WDJ 37, MDT 21, W8HYO 21, KFQ 19, CBI 14, ENA 13, RRV 10, NIT 9, K8GUY 6, (Feb.) W8HRV 16.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: Col. John H. Sampson, jr., 70CX. SEC: FSC. RM: UTM. PAM: BBN. V.H.F. PAM: SP. OCN gave the Novice exam to 16 candidates during March. UTM has both vertically and horizontally polarized antennas for 2 meters and can work both Ogden and Salt Lake from Bountiful, but he has to change polarization for each. OCN has earned the Rocky Mountain Net certificate. The minimum requirement is at least 67 per cent of the total check-ins for each of three consecutive months and RMN meets five days each week. John also is liaison station from RMN to PAN. K8JPO spent his spring vacation in Utah. K7BNZ, in Richfield, is back on the air after 30 years with a DX-100. The Beehive Net with NCS: CXZ, CYH, VEO and ZBL, has been running smoothly. HHW was elected NCS for the FARM Net. QWH was married Mar. 24. Traffic: W7EZM 25, OCX 18, BOD 17, ZBL 10, QWH 8, FSC 6, UTM 3.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA. SEC: CIN. PAN: ZU. RM: DWB. V.H.F. PAM: FPB. OO: LEF and #CSW/5. ORS: DWB, WNU, RFF and K5IPK. OPS: #CSW/5. The Breakfast Club meets Mon. through Sat. on 7272 kc. at 0700: NMEPN, Tue. and Thurs. on 3538 kc. at 1800 MST and Sun. on 7272 kc. at 0730 MST; RMN, Mon. through Fri. on 3570 kc. at 1900 MST. A total of 105 students signed up for the Alamogordo Radio Club's code and theory classes. K5CEV is leaving Carlsbad for Puerto Rico. FHL is welcomed back as EC for Santa Fe. Remember the Rocky Mountain Convention to be held June 13, 14, 15 in Santa Fe. For further information write FHL in Santa Fe. BZA and BZB have refinished their ham shack. YNN received an RCC certificate. The Caravan Club will help Santa Fe with the forthcoming convention. The EC Net meets Sun. at 1800 MST on 3980 kc. All officials are urged to check in. The Totah Amateur Radio Club will spend Field Day at Four Corners USA, and contacts will count for the club's "507 Award" if a QSL is sent the club at P. O. Box 24, Farmington, N. M. Traffic: (Mar.) W5DWB 473, ETF 22, NQG 10, CIN 8, K5GDU 7, LOV 7, DAA 6, GYB 6, W5VC 6, ZU 5, K5GYZ 4, LDS 2, LFF 2, LOU 2.

WYOMING—SCM, James A. Masterson, W7PSO—
(Continued on page 146)

For Every Ham Requirement . . .

the complete **WRL Electronics** line

. . . More "Workable Watts" per Dollar!

340w. Pans & CW: 340w. 330 &
950 (P&P) Input



**Globe King
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Completely
Bandswitching
10-140M
W/T: \$799.00

Relay-controlled; built-in antenna relay,
VFO, commercial type compression
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Bandswitching 10-140. Built-in VFO,
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Self-contained, bandswitching, 0-80M,
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300w CW for 10-140M **Globe Chief
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Forward-Look cabinet, bandswitching
Xmitter. Built-in power supply. Pi-
Net. Provisions for external VFO.

Bandswitching 0 & 2M Xmitter
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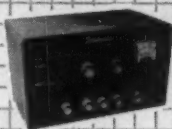


6M:
70w CW,
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W/T: \$139.95 Kit: \$139.95
Regulated screen supply, 3-stage RF
section allowing straight through
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TVI suppression. RF Stages metered.
Excess power for accessories. Pro-
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100w PEP DSB Input, 500000000 Carrier
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All eqpt. Min. 35 db carrier suppression all
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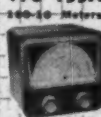
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For voice operated control, with extra con-
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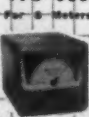
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300-40 Meters
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For 10-100M; out-
put on 40 & 160M.
Vernier drive with
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ture. Self-contained,
well-filtered power
supply with voltage
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For 5 Meters
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Perfect zero beat.
Built-in power supply
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lowest drift (0.005%)
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Power Attenuator PA-1



Use with Xmitters, up to 70w
input for swamping drive to
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Shielded Cabinet
For Xmitter, with final RF input up to 600w,
50-10M. Fixed-link coupling in output. Cook
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For input to Xmitter, or 100w CW, 75w PEP
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Unbalanced output. Self contained.

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Complete with well-filtered power
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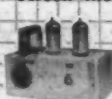
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Compact, stable, crystal converter
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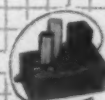
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Transistor and printed circuit as-
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Screw terminal input for key stan-
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300-3500 cycles. In-
creases modulation in-
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Easy to assemble. Operates on 75 thru 10 meters. Has TVI suppression; meter circuit for RF voltage input, plate current. RF amps output; low Z input, 400-watt P.E.P. input with only 20 watts drive; pi-net, output; four Mod. 1625 Tetrodes. Especially effective for SSB; also AM, PM, CW signals. Complete with power supply, tubes. Only.....\$149.95
LA-400-B, same as above, wired & tested. \$199.95
Also, Modified 1625 Tetrodes.....each, \$3.75



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Model 8020 plugs into 75A-2, -3, -4, Collins receivers; needs no changes or adjustments, Collins VFO controls freq. for both transmitter and receiver. For all SSB phasing type exciters using 9mc mixer freqs. Automatically zeroes in Xmt to exact freq. received. Operates upper and lower SB on 75 and 20 meters. Complete with power supply...only \$129.95
Model 8010 for KWS-1 75 thru 15...only \$179.95

RF CHOKES

Hi Power Model 160-6 has max. rating of 5000 volts DC at 2.5 amps. Inductance 162 uh at 1 kc. Designed to operate on all amateur bands, 160 thru 6 meters. Each.....\$3.50
Chokes custom designed to your requirements also available.



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SEC: MNW. RM: BHH. The Pony Express Net meets Sun. at 0830 on 3020 kc. with AMU and MWS alternating as NCS. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc. with BHH, DXV and NMW alternating as NCS. QPP, chairman of the Wyoming Hamfest, which will be held West of Buffalo, Wyo., on U.S. Highway 16, reports that plans are complete for the annual get-together July 12 and 13. The Sheridan gang is sponsoring the event, which promises to be first-class operation with plenty of prizes. Additional details may be had by writing QPP, 262 E. Loucks St., Sheridan, K7CSW is a new call in Casper. Art has a DX-100 and an SX-76. NUT has a new NC-300 and a B&W 518B. VHP has moved to Casper from Arizona. Ray has a DX-35 and an SX-99. Traffic: WTDV 26, BHH 12, NMW 8, VHP/7 4.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK
SEC: EBD, PAMs: DGH and K4BTO. RM: RLG. With AREC membership climbing again, we are on the go. Still more members are needed, however to fill gaps in the organization, particularly in the southern part of the State. If you don't know who to contact in your area to join, drop me a line. I'll be happy to assist you in getting organized. Congratulations to K4BWR and K4GBO, the first on a new shack and the second on a new boy. KJD is working the world with a new beam. LYA also has a new 3-band beam on a 60-ft. tower. ZSH got WAS and YBO has a 25-w.p.m. certificate. KXSBP, ex-WSDYD, wants Alabama contacts on 10 meters. Let's help him. Montgomery has shifted to 3965 kc. because of BCL. The net still meets Sun. at 1400 CST. AENO, the 6-meter net, needs representatives in the southern section. Contact K4JSP for details. K4KJZ is winner of the plaque as outstanding NCS of AENP for the last quarter. Traffic: (Mar.) W4RLG 189, K4BTO 37, W4R1X 32, YRO 48, K4FOG 41, W4WAZ 34, K4AOZ 32, J1A 28, W4OKQ 26, K4POZ 26, W4CFE 25, CRV 22, E1Z 22, MI 19, K4BWR 17, CXC 13, KJD 13, W4USM 12, CU 11, K4KJZ 11, SIB 10, W4EOH 8, RTQ 8, AAQ 5, W4HKK 5, K4KAK 5, W4ZSH 5, K4GOW 2, W4HON 2, K4MQH 2, W4TOI 2. (Feb.) W4YRO 72, DGH 48, TOI 6, K4AAQ 3.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAM: TAS. Section nets: EPTN, 8945 kc., 0700 Mon. through Sat.; FMTN, 7230 kc., 12 noon Mon. through Sat.; TPTN, 3945 kc., 1730 daily; FN, 3675 kc., 1900 Mon through Sat.; GN, 7105 kc., Mon through Sat., fast session 0900 to 1000 and slow session 1000 to 1130; FEPN, 3910 kc., 1900 Tues. only. K4EXN is off to Georgia Tech. 3CUL is visiting again in Florida and is active with her portable rig. Two Florida YLs participating in the YL-OM Phone Contest were BIL and KOM. Fran scored 15,104 and Ernie 7600 points. The Floridians held their annual meeting at the Suncoast Springs Hamfest at Orlando. In order to create more interest in the Annual ARRL Field Day, to be held the last week end in June, the Staff of Florida Skip will sponsor an FD Trophy to the Florida winner. The trophy will be held for one year by the winning club then passed along the following year to the next winner. New General Class licensees in Dade are K4SYL, K4LNU and K4ONY. SJZ has a new Tri-Bander. IHW is back from K8-Land and sporting a new DX-100 and a RME-4350A. He will QSL all contacts upon written request. Your SCM visited with the West Palm Beach Radio Club Apr. 4 and renewed many old friendships as well as making new friends. The club will support the local RACES program. Traffic: (Mar.) W4DFU 717, K4SJH 623, W4IWM 607, LCF 265, W3CUL 247, W4HCQ 245, HNV 227, K4KDN 182, CFY 111, AHW 101, BLM 100, W4LMT 97, K4EXN 95, W4YIT 89, K4COO 83, AKG 71, W4TKE 62, TAS 60, WS 49, K4DFE 48, W4FE 46, K4AEF 32, HR 32, ILB 32, W4FSS 30, C02UG 25, K4JZJ 20, RLL 17, TFS 16, JVA 15, W4KZT 15, K4MTJ 13, W4BJI 13, EHW 11, BWR 9, K4IWT 8, W4SZJ 7. (Feb.) K4LDSN 569.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RM: AXP and BVE. The USNMCL Club at Panama City, K4NDD, has a DX-100. ARRL Director ZD spoke to a large gathering in Ft. Walton in April. New or renewed appointments have been given to OJD, CEF, APE, DLO, DSH and BVE. APE is an active OO in the Tallahassee Area. OJD is QRT for transmitter pairs. DSH checks into the MARS and Alabama Phone Nets. CEF has made WAS, WAC and worked 70 countries with the Valiant. AXP is working on a high-power rig. Florida Skip, the all-Florida ham newspaper, needs more support in this section. Write me or IYT. The Pensacola (Continued on page 148)

HARRISON

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Now, new improved weatherproofed and tunable "Insu-Traps" make them even better! Pre-tuned by the factory for positive performance, but color code calibrated for ease in peaking from phone to CW, or to any favored part of the bands. Rated at full KW. Perfect match (lower than 1.65 to 1 SWR) to a single 52 ohm co-ax line on all three bands—10, 15, and 20. Ruggedly constructed, for years of dependable performance.

NOW, WITH THE NEW AND EXCLUSIVE TRI-AXIAL GAMMA MATCH

GIVES YOU A PERFECT 1:1 SWR MATCH ON EACH BAND!

THE TRIPLE BAND BEAMS THAT HAMS ALL OVER THE WORLD HAVE BEEN RAVING ABOUT!

THREE ELEMENT

The favorite! Now with separate 10 meter reflector. Greatest power gain per Dollar, 8 db on all bands! 18 foot boom, 29 foot element. Weighs 58 lbs.

Model 152-TG3, \$99.75

(Additional 10 meter director element, for even more boost in power. Model AD-1, \$14.95)

TWO ELEMENT

A space saver that can give you a healthy 5.8 db gain in signals transmitted and received! Boom only 6 feet long. WT. 36 lbs.

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Single three-band dipole, may be rotated or fixed in favored position 28 feet long, weighs 10 lbs.

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Here's real top-grade performance and dependable long service—at reasonable prices!

Hy-Gain's line of single band, three element beams will give you an average 8.5 db power gain, a front to back ratio of 24 db. And, their exclusive, new GAMMAXIAL matching system guarantees a perfect 1:1 SWR match to 52 ohm coaxial cable—without any fuss or fiddling!

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BEAM ROTATOR

New, complete heavy duty rotator system, with built-in roto-brake. Mounts in any standard tower. Has 16" diameter illuminated great circle map to automatically indicate beam direction.

Complete, with control box \$139.95

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Hurry on in! With the new highways, it really isn't much of a drive, from even Maine, Ohio, or Virginia! Easy parking. Bring along your old gear, for my tip-top allowance. I guarantee you'll go home delighted.

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FREE PARKING

While making any purchase over \$10.00, you can park for one hour, free, at any motor, or in the **NEW BIG PARKING LOT RIGHT AT OUR CORNER**

NEW! SELF-SUPPORTING MULTI-BAND VERTICALS

Only 21 feet high, but capacity top-hat and 3 Insu-Traps give low SWR match to 52 ohm co-ax, on 10, 15, 20, and 40 meter band. Use with radials or on ground. Complete with new, improved fibre glass nylon base, hardware, and complete instructions. Model 14-AV — \$27.95

Combination Radial and guy wire mounting kit. Complete with 5 ft. mast. Model 14-RMK — \$9.95

NEW! FULLY AUTOMATIC, 10 thru 80 without taps or switching! 38 feet high. With insulated mounting for side of house, tower, or pole. Model 18-AV — \$69.50

NEW! Three Bander for 10, 15, and 20, Only 20 feet high. With new self-supporting base insulator assembly. Model 12-AV — \$19.95

Combination Radial and guy wire mounting kit. Complete with 5 ft. mast. Model 12-RMK — \$9.95

NEW GROUND PLANE for 2 and 6 meters. Model 26-AV — \$16.95

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HY-GAIN 5 BAND WONDER DOUBLET COILS

One pair of Insu-Traps in a 107 ft wire, center-fed with co-ax, gives a high efficiency antenna, with automatic easy loading on 10, 15, 20, 40, and 80. Full KW. Pair, with complete instructions and wire clamps. \$ BDC — \$12.50

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- True ground-plane operation on all three bands with low angle of radiation.
- Pre-tuned center band operation of 10, 15 & 20 meters with one 52 ohm feed line, requires no switching, tuning or adjusting.
- SWR not over two to one.
- Designed for full kilowatt input.
- Traps are rigid air-wound self-supporting coils of 3/16" aluminum rod.
- Condenser is aluminum tubing with "Phenolite."
- Antenna is heavy gage 615T6 drawn aluminum tubing. Coils, clamps and fasteners are also aluminum.
- Support is heavy wall pipe with set-screw to lock mast which may be any pipe 1 3/4" diameter.
- Radiator height — 13' 8".
Radial length — 16' 8".
- Complete assembly is ready to install (less feed line) with radials and insulators attached — only \$28.50. Shipping weight — 9.5 lbs.

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MANCHESTER, N. H.

Club Ladies Auxiliary got a full-page spread in the Sunday paper. JJK and his XYL have been transferred to Alaska. Mary was succeeded by the XYL of GOW as president of the PARC Auxiliary. K4RMO, RKH and K4QFP combined efforts on 40 and 10 meters to get an urgent message from LQU in Tennessee to his XYL. SYT is on a.s.b. with an HT-32 and a 73A-4. SJT has swapped the NC-300 for an SX-101. CEF suggests a W. Fla. net for traffic handling and/or emergency work. Traffic: (Mar.) W4BVE 280, OJD 13, DSH 9.

GEORGIA—SCM. William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thur., 0800 Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN 3395 kc. at 1900 EST Mon. through Sat. with PIM as NC; 75 Meter Mobile Phone Net on 3995 kc. at 1330 EST each Sun. with UUH as NC; ATL Ten-Meter Phone Net on 29.6 Mc. at 2200 EST. each Sun. with VHW as NC; GTAN on 7290 kc. at 1000 EST each Sat. with K4ORR as NC; GPYL Net on 7290 kc. at 0900 EST each Thur. with K4IFF as NC; The Kennehoochee Emergency and Traffic Net on 29.46 Mc. at 2130 EST each Sun. We sure are sorry to hear the passing of HYW's mother. K4KIV has installed an HQ-150 receiver and a Viking Valiant at home. FGH is on the waiting list for a Thunderbolt. KN4OCI dropped the "N" and has a new WRL VFO to match the Globe Scout in Quitman. K4HOU has moved to a new QTH. ZWT did not have to send a single OO notice in March. PDP has a new NC-300 receiver. K4KVY has a new HQ-100 receiver. Amateurs at the U. S. Naval Air Station, Glynnco, Brunswick, Ga., have organized the Glynnco Amateur Radio Club with K4OKH, pres.; K4SVI, vice-pres.; K4ULT, secy.-treas. LNC has recorded numerous passes of Explorer I and Vanguard I. The GSN still is looking for outlets in the Macon, Albany and Thomasville areas. Let's give the net a hand. Don't forget to send your appointment certificates for renewal. Traffic: (Mar.) K4DQY 300, FCI 209, MCL 100, FBA 174, W4ETD 130, BXV 112, DDY 102, PBK 87, K4HOU 40, BAI 34, CZQ 18, W4ZWT 15, K4APC 15, W4PDP 6, K4KVY 1.

WEST INDIES—SCM. William Werner, KP4DJ—SEC: 4AAA. AET and AHH are new on 3925 kc. from Arecibo. ZC now has dipoles coax fed. WX is mobile with Gonset twins. RK now has a Tri-Bander beam 40 feet high. ACQ installed a Q multiplier on the HQ-120. FAE put up antenna systems on 60-ft. poles at the U.P.R. PQ and KE are active. WP4ANG is the son of KE. AMG is the son of CK and CL. MV is building a 40-meter beam. MN now is at Caparra Terrace. OS visited P.R. after a 3-year absence in W2-Land. W3COO now is KP4ANQ in Ponce. KD worked 24 new YL stations on 15-meter phone for a total of 109 in the YL-OM Contest. KD, YT, ADR and WP4ALY are using reflected power meters. WP4ALC graduated to KP4 and is setting up a modulator for the DX-20. KD received cards from KP4MCG and ZD4CM for 219 DXCC confirmed. W2IQG visited KP4-Land. MS skeds W2THD in Buffalo so RM can talk to his son there. ZN is the tax expert on electrical equipment with the Dept. of Internal Revenue. YT has a Telrex Christmas tree array for 10, 15 and 20 meters on a 35-ft. tower. KN4PXY, attached to the USCG Cutter *Sagebrush*, registered in the AREC and operates on 21 Mc. QEB is on a.s.b. with 2000 watts. ZC is building a 2500-volt power supply for p.p. 813s. ADR uses voice control on his transmitter. UW is back on the air, c.w. only.

CANAL ZONE—SCM. P. A. White, KZ5WA—W6BMO/MM, on the SS *Santa Elena*, and W2EZV/MM, on the SS *Pioneer Ming*, visited RV and VR when their ships passed through the Canal in March. Ex-BE, former RM of the Canal Zone, is now residing in Seattle, Wash., and is studying for his General Class license. The Caribbean Army MARS Net is active on 27,994-kc. phone Mon. at 2130 and Wed. at 2100 EST; also on 7350-kc. phone Sun. at 0800 EST. The MARS director is "Twigg" Branch, AC5JS, who plans other nets as participation warrants. New KZ3s are QQ, J. Smart; WR, L. Wrazen; and AG, W. Preston, Jr. New Novices are CIN, W. Karge, and HSN, Helen Shen. Traffic: (Mar.) KZ5VR 83, JJ 33, KA 23, RM 22, EL 19, WA 18, HO 16.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM. Albert P. Hill, jr., W4OJB—SEC: LIP, RM's BHG and GJF. PAM's: K6BWD and W6ORS. The following stations earned BPL for the month of March: K6MCA, K6HLR, GYH, K6MLL, K6OZJ and ZJB. New appointees for the month are K6KZY as OO, K6HLR as ORS, K6KJY and K6GLS as OBSs. K6MCA lost a 75-ft. Telrex tower in the wind storm. ZJB has a nice batch of new equip-

(Continued on page 150)

Featuring



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In Kit Form: \$119.95

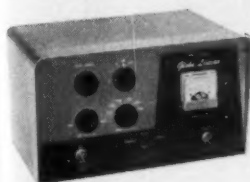
3 Modes AM - CW SIDEBAND in the new wr1 Sidebander DSB-100

**No Obsolescence: Adaptable to Present AM
 Equipment: Standard Crystals & VFO Used**

- ★ 100w PEP DSB Input, Suppressed Carrier; 40w AM, 50w CW; completely bandswitching, 80-10M; continuous coverage 3-9mc and 12-30mc . . . a complete transmitter, ready to go.
- ★ Minimum 35 db. carrier suppression on all bands; if one sideband QRM'ed, receiving operator can switch to other.
- ★ Three-stage RF section allows straight through operation.
- ★ Internal tone generator facilitates tuning.
- ★ Pi-Net output 52-600 ohms; speech clipping and filtering for powerful communication punch and minimum band width.
- ★ 600V power supply has ample reserve for external accessories; socket supplied on rear of chassis.
- ★ Thoroughly TVI-protected; provisions for antenna relay control.

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WRL's Globe Linear LA-1



Wired & Tested: \$124.50
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Operates Class B or C with Grounded Grid Final. 200w input operated AM Class B. 300w DC input, or 420w PEP input, Class B Linear SSB or DSB. Requires 15w RF driving power. 300w Class C for CW (18w driving power). Included well-filtered power supply. Pi-Net output covers 80-10M, matches loads 30-150 ohms. 52 ohm Pi-Link coupled output on 6M. Extensively bypassed, filtered & shielded for TVI.

SUCCESSOR TO THE MODEL 755 VFO

WRL's VFO Model 755A



W/T: \$59.95
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For 10-160M; output on 40 and 160M. Vernier drive with shock absorbing features. Complete with self-contained, well-filtered power supply with voltage regulation. Temperature compensated for extra stability for SSB or DSB. Ideal for use with Sidebander. Approx. 50V RF output; will drive oscillator stage of any Xmtr. on market; simply plug in crystal socket. New Forward Look Cabinet.

**NEW BANDSWITCHING XMTR.
 FOR 6 & 2 METERS**



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the new Globe Hi-Bander

- ★ Completely bandswitching for 6 & 2M. Power input: — 6M, 70w CW, 60w AM; — 2M, 60w CW, 50w AM.
- ★ Three-stage RF section allows straight through operation; all RF stages metered; all stages TVI-bypassed.
- ★ 52-72 ohm coaxial output matches all beams and most doublets. Variable antenna loading control.
- ★ Regulated screen supply; adequate harmonic and TVI suppression.
- ★ Ideal for operation with VFO Model 666; suitable for use as mobile Xmtr.; provisions for plug in mobile power supply.
- ★ Adequate reserve power for operating VFO, speech clipper, relay, etc., from auxiliary socket on rear chassis apron.



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ATTENTION HAMS

It may be easier than you think to get that NEW Johnson, Hollicrafters, Hammarlund, B & W, National, Fisher or Bell Hi-Fi, Telrex, RME, Gensel, Morrow, or other ham gear, if you have equipment to trade. We are always interested in Model #14, #15, #26, #28 Teletype machines, TD #14, perforators, reperforators, etc.: also BC-221, BC-348, BC-342, BC-610, ART-13, URM-81, etc.

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ment, a Pacemaker, a Thunderbolt and a 75A-4 receiver. K6UYK is building a new "Sputnik Chaser!" BES is putting up a 3-band quad. The San Gabriel Valley Radio Club is doing a bang-up job tracking the satellites. SRE took a trip up north and visited AZF in Reno. For all the younger fellows, the Teen-Agers Net is active on 3540 kc. Tue. at 1830 PST. Contact K6KYJ, the net manager. K6QQD is the new net secretary for MICAN-7. K6COP is working over antenna traps. HJY now holds MTHC on SCN and ALN2. K6EPY moved from Venice to North Hollywood. K6DQA has a new Viking 500 on the air. K6BEQ is battling it out mobile with G66 and G77. K6LOP is on 6 meters with a cool 300 watts c.w. and 200 watts phone. CIS is QRL with all the c.d. nets. K6PLW is helping to organize a club at Glendale High School. K6QMK reports 6-meter openings to the Southeast and South America. K6KUF will be operating from some remote Mexican Island as XE6KUF. Support your section net, the Southern California Net, which meets at 1930 PST daily on 3600 kc. DTQ, president of San Gabriel Valley Radio Club, announces that the club will award a certificate to any amateur who contacts ten members. To apply, send list of dates, times and calls to the tenth member worked. DTQ has more details. Traffic: K6MCA 1181, HLR 1063, W6GYH 767, K6MLL 685, OZJ 529, W6ZJB 425, BHG 245, K6UYK 169, OQD 160, EA 80, W6HJY 76, K6KZY 75, QMK 62, KYJ 51, GCC 43, HOV 32, GLS 31, W6VSH 30, K6DQA 23, W6SRE 10, CIS 5, K6EPY 5, W6JQB 3.

SAN DIEGO—SCM. Don Stansifer, W6LRU—K6DVF, with K6HYK as his assistant, used mobile units of the AREC in San Diego City to help raise money for the National Cancer Society. Also assisting were the Sheriff Reserves. This is the second year Dave, a college student, has spearheaded this worthy cause. The new president of the North Shores Club is EWU; secretary is K6YLQ and treasurer is SK. The club call is K6HAL. The tentative dates for the Southwestern Division Convention are Oct. 10, 11 and 12. The Convention will be held under the sponsorship of the San Diego Council of Amateur Radio Organizations. The Vista Amateur Radio Club is now affiliated with the ARRL. The club call is VPU. The president is K6LQK; who also is EC for Vista. KVB is now on s.s.b. 30QI is operating for the Marine Corps at YDK. K6UOD, in Yorba Linda, becomes the second San Diego single station operator to receive the BPL Medallion. Congrats to Harry on a fine job of handling traffic. K6ULJ continues to log and work good DX on 50 Mc. K6ITH is now in Jacksonville, Fla. K6LDI and IDE are now in KA-Land. Two students at Dana Junior High in San Diego passed their Novice Class exams during the Easter vacation. The Helix Club adopted a new constitution at its April meeting. The April meeting of the San Diego DX Club was held at the home of BZE. Traffic: (Mar.) W6YDK 687, K6UOD 541, W6EOT 169, BKZ 26, SK 11.

SANTA BARBARA—Acting SCM, Robert A. Henke. K6CVR—From my reports Santa Barbara intends to be well represented in Field Day this year. The Pointsetta Radio Club elected NTF, pres.; LQJ, vice-pres.; Bob Kanthack, treas.; UOZ, secy. PZZ is now in the TV repair business. ALQ and OHX claim over 100,000 points in the DX Contest. W6YWQ is getting in some air time while baby-sitting the jr. operator. Nipome is on the ham map with KN8QKS on 40 meters. MSW's quad is polling in some nice 20-meter DX. K6VDW is active on 2 meters in Grover City. JPP installed a new 75-meter antenna. K6DXW moved to a new QTH in Goleta. JFP has a Black Widow going on 2 meters and was up to Arroyo Grande for a nose-to-nose QSO with YCF and IHD. He just happened to have his new rig with him with the bottom cover off, making it real easy to admire. Traffic: W6YCF 9, FYW 5.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker. W5TFP—Asst. SCM: E. C. Pool, 5NFO. SEC: BNG. PAMs: KSAEX and IWQ. RM: ACK. Boy! Did I goof! I misplaced four traffic reports for February—two made BPL, too! My apologies. We are pleased to have NFO accepting the job as Asst. SCM. Thanks to JGD for serving in that capacity for a one-year term. ZKT renewed as OUS. GY is meeting all c.w. nets. DNQ is now Army MARS. The NT-O handled 86 QTCs on Easter Day and had takers for all traffic. The new QTH of HGR and IKI is now Andrews. BTU and PVT are "limbering up" new kw. rigs on 75 meters. HGR is sporting a new Viking 500! Your SCM sure enjoyed the visit with the Midland ARC on the occasion of its Annual St. Patrick's Day Ham-Swapfest. The Jesuit High ARC of Dallas is now an ARRL affiliated club. K5IGD now is s.s.b. with a new 20A. DKT and GKIH are doing an FB job editing and publishing the Wichita

(Continued on page 152)

At ARROW....Summertime Is Mobile Time



Meradec MB-6 Receiver

Covers 80, 40, 20, 15 & 10 meter bands. Sensitivity is 1 microvolt or better on all bands. Signal to noise plus signal is better than 20 db. Crystal-controlled second mixer. Bandpass—4 kc at 6 db down. Integral—100 kc crystal calibrator. Illuminated "S" meter, converts to field strength meter for transmitter tune-up. RF and audio gain controls. Noise balanced squelch circuit eliminates inter-station noise but opens on extremely weak signals. Temperature stabilized for single side-band reception. Complete with 13 tubes. 11 1/2" x 4 1/2" x 7 1/2". Shpg. wt. 12 lbs.

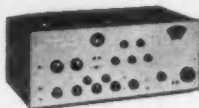
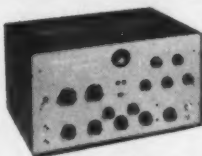
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Meradec MB-565 Transmitter

80, 40, 20, 15 and 10 meter coverage. VFO/Xtal controlled. Gold-plated variable caps for low RF losses. VFO operates at 1/2 carrier frequency to cathode follower, then a class A buffer to driver operating as doubler. Neutralized PI network final operates straight through on all bands at 60 watts input. Uses carbon, crystal, or dynamic mike. High level plate modulation. Operates into 50 to 75 ohm antenna or tuner. Antenna changeover relay built in. Illuminated meter measures all necessary currents and voltages. 10 tubes. 11 1/2" x 4 1/2" x 7 1/2". Shpg. wt. 14 lbs.

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Lakeshore Phasemaster Models II-A and II-B

Band Switching: 160, 80, 40, 20, 15 and 10 meters. 65 watts PEP output from 6146 power amplifiers giving sufficient power to drive nearly all types of linear amplifiers including grounded grid finals. SSB or DSB: Suppressed carrier, narrow band phase modulation or break in CW. Voice control and anti-trip circuits built in. Talk-on-frequency or Zero beat. PI-Network Output: Matches 50-600 ohms impedance coax or balanced antenna output connectors. Voltage regulation of VFO, 9 mc oscillator and 6146 screen. Low pass filter in audio section gives speech cut-off of 40 db at 3800 cps. Temperature compensation in critical 9 mc circuits for improved stability. Novice or CW operation on 160, 80 and 40 meters with direct frequency crystals.

*Built-in VFO—100:1 precision dial tuning, anti-backlash gears, no string or cable drives. Frequency stability and reset accuracy better than 100 cycles. Completely independent of Exciter section. Built in regulated power supply. Individual AC power switch allows VFO to be left on if desired.

*Applies to Model II-B only.

Amateur Net Model II-A\$329.50

Amateur Net Model II-B\$459.00



Versatile Miniature Transformer

Same as used in W2EVL SSB Rig—March '56 QST. 3 sets of C.T. windings for a combination of impedances: 600 ohms, 5200 ohms, 22,000 ohms. (By using the center taps the impedances are quartered). The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, phone patch, line to grid or plate, high impedance choke, etc. Size only 2" h. x 1 1/2" w. x 3/4" d. Brand new. Fully shielded. At fraction of Government cost.

Amateur Net, each\$1.39
3 for \$3.49 10 for \$10.75



"Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with R & W 3013 inductor. Only 8 ft. long for 10 meters.

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Mosley MA-3 Trap-Mobile

3-band mobile operation at its best. "Trap-Mobile" by Mosley offers the convenience of band-switching right at the transmitter and receiver. No mechanical gadgets or relays. Stainless steel whip sections & polished aluminum traps. Space wound coils never change inductance—weather sealed traps and potted base coil. New anti-sway design and slim profile cut down wind resistance & drag. Trap-Mobile has radiating qualities equal to an 8 ft. whip on each band—yet overall length is only 7'9" from base to tip. Low SWR over full width of 10, 15 or 20 meters.

Amateur Net\$19.95



TS-13 Handsets

Push-to-talk butterfly switch. Handy units for use in mobile, CD units, ham use, etc. Complete with rubber covered cable and plugs. Shpg. wt. 3 lbs.

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12 Volt Dynamo

Rated output: 625 volts DC at 225 ma. High efficiency; compact; no battery strain; latest design. Brand new, recent military production. 5" diameter, 9" long. Shpg. wt. 16 lbs. Worth two to three times this low price\$13.95



6 Volt Dynamo

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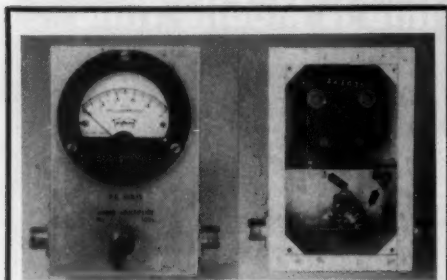


Fig. 21-30—Dual-range r.f. voltmeter for use in coaxial line, using a 0-1 d.c. milliammeter. The voltage-divider resistors R_1 and R_2 (Fig. 21-29) are at the center in the lower compartment. The by-pass capacitors and R_3 are mounted on a tie-point strip at the right.

This handy instrument may be just what you need to tune up that transmitter for maximum output. Or it may be used as a null indicator in an r.f. bridge you may use when matching that feedline to your antenna. A complete description of this useful device, and many others, appears in the Measurements Chapter of the big 1958 *Radio Amateur's Handbook*: 746 pages, over 1350 illustrations, charts, diagrams and tables.

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2-pc. adjustable aluminum mast, bracket, universal bumper huf.
No holes to drill. Coax feed line not inc. Net. \$16.95

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Falls ARC paper. It is very informative. Amateurs, as usual, performed in "top deck" manner during the tornado in Wichita Falls Apr. 2, which was the anniversary of the Dallas "blow." K5GBS is "head-in out" to Korea for a spell. Thanks for the increase in traffic reports. Traffic: (Mar.) K5IGY 308, BNH 211, W5DAG/5 206, SMK 179, K5ETX 162, LZW 150, W5GY 94, K5ILL 71, W5BKH 70, BCK 64, K5CDF/5 31, HTH 28, W5CF 25, K5DNQ 22, ACD 18, BZH 11, W5BN 6, (Feb.) W5ACK 506, K5LZW 151, W5SMK 118, K5BNH 85.

OKLAHOMA—SCM. Richard L. Hawkins, W5FEC—SEC: LXH, PAMS: EJK and MFX K5LAP is retiring from the Army and moving to California. Paula, IOZ, is in the finals of the State Spelling Bee. EHC finds that 50 Mc. is good for local contacts. K5BNQ is busy with nominations for YLRL offices. OQD is heard on the nets again; now we need GZK back to sound like old times. K5INC was appointed as OPS. EJK resigned as PAM for 40 meters. Thanks for the FB job, Chief. MRK was busy moon-watching on 108 Mc. MMD worked 60 countries the first week end of the DX Contest. RRM was busy with a law suit and missed the DX Contest. GOL is heard checking into all the nets. YJ, at O.S.U., operated portable in the Student Union during Engineers Week and stirred up a lot of interest. EKA is due a fine hand for his work in helping KNSOVF, who is blind, to get his transmitter working. The Lawton-Ft. Sill ARC originated a lot of traffic at the Easter Pageant, Oklahoma's Ham of the Month: K5BBA, for his FB reporting job from Bartlesville. Traffic: (Mar.) W4RCM/5 408, W5ESB 135, K5INC 88, W5KY 88, JXM 66, K5DUF 48, W5FEC 48, KWK 31, MFX 29, FKL 28, K5CBA 27, EGS 27, W5ERI 26, K5LAP 26, KTW 26, W5PBG 23, MGK 18, IWL 19, VLW 18, K5CAV 17, EZM 16, W5GOL 13, K5BNQ 10, DUJ 9, W5IER 3.

SOUTHERN TEXAS—SCM. Roy K. Eggleston, W5QEM—SEC: QKF, RM: FCX, PAM: ZIN. It is with the greatest regret that we record LHJ as a Silent Key. He, his XYL and son were killed in a car wreck. The Houston Amateur Radio Club C.D. Net participated in its first emergency following an explosion at a rubber plant at Texas City. Congratulations to K5CAN on being made vice-president of F. H. Maloney Company. The good news has been received from the Oklahoma City gang on hotel rates for the West Gulf Division ARRL Convention from the Biltmore Hotel—single \$4.50, double \$7.50. It is good to hear DEW on 40 meters again. GHL has returned to Texas A & M College. The Six-Meter Net in Houston had 21 stations check in on drill. It is Silent Keys for K5BQL. She passed away at the NAS hospital in Corpus Christi. ZIN is a new PAM, K5LIU is a new OPS, AQK is activities manager for the Corpus Christi Amateur Radio Club. A hearty welcome to the Beaumont Radio Club on its affiliation with ARRL. There was a nice write-up in the Kingsville Naval Air Station paper (*The Flying K*) about the station's amateur radio club. K5HGP has a new SX-101 and a three-element 10-meter beam. NXZ has been working DX on the low edge of 80 meters with 75 watts. The 7290 Net had 44 sessions, 1148 station check-ins and 587 messages. The STS C.W. Net had 26 sessions, 229 station check-ins and 238 messages. Fellows, it is time to plan to attend the ARRL West Gulf Division Convention in Oklahoma City on July 25, 26 and 27. Traffic: (Mar.) W5PHA/3 298, W5EGD 224, UMY 206, NXZ 174, K5JCC 104, W5ZIN 85, FCX 66.

CANADIAN DIVISION

MARITIME—SCM. D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, IOC. SEC: AEB. AI reports that the former NBAREC Net has been changed to the Maritime AREC Net and meets at the usual time (1830 Wed. on 3700 kc.). Field Day competition will be keener this year with more clubs making plans for participation. The Maritime Keyers' Net (2630 kc. daily at 2000) ties in with the Eastern Canada and Eastern Area Nets and provides an excellent outlet for long-haul traffic. Maritimers are saddened by the passing of two well-known amateurs, FG and SL. FG was the second to make the WAZ Honor Roll. HD and DQ have joined the s.s.b. group while TA has defected to a.m. while operating/MM with a Lysec rig in his boat. WL attended the IRE Convention and S.S.B. Dinner in New York. Congratulations to HY, who recently passed his A3 exam. ZM has a new five-element beam for 6 meters. OD is now active on 6 meters. A snow and sleet storm disrupted communications on the South Shore of N.S. on Apr. 2. Communications during the emergency were handled by MA, VN, LB, ABJ, LG, IR, OC, ADH, FM, AAR and AA. Traffic: VE1BY 133, ADH 79, FQ 47, FB 39, DB 32, ABJ 39, AEB 9, OM 2, BN 1.

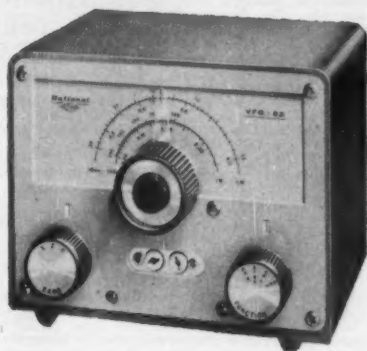
(Continued on page 154)

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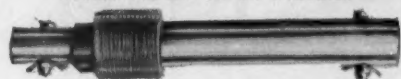
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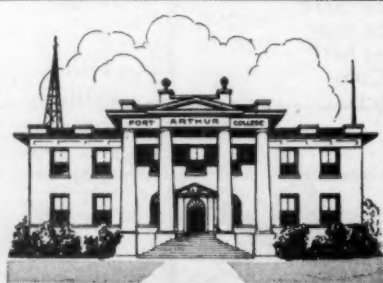
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ONTARIO—SCM. Richard W. Roberts, VE3NG—AJR has a new QTH with 7 acres for antennas. EJJ is recovering from a severe operation. BWK vacationed in W4-Land. GI visited Toronto during the Easter week end. NH, DZA, and AJA were mobile at Menford at Easter. DUU was in Ottawa. The Nottown RC held a very successful Annual Dinner, likewise the Scarborough ARC. The Sportsman Show in Toronto was supported by the AREC in that area. The SCM was in charge once again. EC's DSM and AIB, along with HB and BHD, assisted. EAM was awarded his first BPL. VP also was very active. KM is away to W6-Land for a vacation. The Hamilton fellows, hosts for the 1958 ARRL Ontario Convention, are getting their program into shape. The North Bay Hamfest will be held June 27 KM, the SEC, reports there are 401 members in the AREC in Ontario with 96 mobiles, 67 portables and 2 portable marine. The Quinte ARC now has its new transmitter, a DX-40. AUU and NN were down with the flu. The Niagara Peninsula RC runs a Personal Column in its paper. AAS is now in VE2-Land, 2VF visited CAB. AML was awarded his 15-w.p.m. sticker recently. IA, ex-SCM, Ontario, WT, the PAM and KM, the SEC, got together with the present SCM, NG, in Burlington recently. NZ has a new QTH in Stroud. DFA is back in the hospital again. RH has recovered. HE was assistant to the SCM on the AREC organization of the Toronto Sportsman Show Ham Booth. BVF is home again after an illness. The new v.h.f. club in Ontario is doing remarkably well. The CBC recently ran a half-hour show concerning hams in Ontario. The title was "Calling CQ." Traffic: (Mar.) VE3EAM 514, DCX 263, BUR 181, NG 118, BZB 135, AUU 117, AML 114, EII 100, GI 94, NO 91, DTB 68, DPO 51, BJV 47, KM 32, RW 28, AQE 26, DH 20, EOW 18, CE 18, BOY 17, DGW 13, APL 8, DLC 7, DWN 7, EAU 7, ELC 7, AVS 2, SG 2.

QUEBEC—SCM. C. W. Skarstedt, VE2DR—Nets: OSN/PQN, 3535 kc, at 1900; Quebec Fone Net, 3780 kc, at 1845. The St. Maurice Valley Amateur Radio Assn. was reorganized with AUH, pres.; UB, vice-pres.; AJD, secy.-treas.; TI, AHK and VI, directors. AEK, its founder, was present at the meeting. OTs, AEK and OT (1925 vintage) also were present. AAL and ALD bought motor scooters and plan trips during the summer. AEG operates phone from Leves West. ABE will be active from Mon Repos Beach this summer. ASM got his phone ticket. ASW is mobile with a 6146. ATL will be SWL re propagation project. AUD is building a 2-meter converter. EE, the Canadian Amateur Radio Club, is very active with 75 members. The Lakeshore Club had a pleasant surprise visit by VQCC from Nairobi. W3BTQ/VE2 now has 122 confirmed for DXCC (165 worked). AIG needs only Zone 24 to complete WAZ. YA, QSL Mgr., reports DX business is booming. YU skeds his father, G500, regularly on 10-meter phone. AKT deserves much praise for an excellent job in teaching Novices. VE2s already are discussing the North Bay Annual Hamfest AWV, Terrebonne, has a good phone signal and also is DX-ing on 20 meters. AOV, assisted by ZA and AWD, is building a new 813 rig. AKX plans to operate from Lake Manuan in Northern Quebec. OR is looking forward to the annual trek to Cape Breton, Nova Scotia. We are sorry to report the sudden death of DI, Longueuil. Traffic: (Mar.) VE2DR 374, CP 54, EC 25, BG 24, ATL 15, XR 14.

BRITISH COLUMBIA—SCM. Peter M. McIntyre, VE2JT—Calling all c.w. enthusiasts: TF wants more fellows to check in on 3650 kc. between 1830 and 1930 Mon. through Fri. He has some stalwart supporters now but would like more and also would like more outlets on c.w. in B.C. We hear that AFP is going Down Under on an extended trip. If he can't work them on the air he is going to chew their ears off in person. MS has moved out to QRM Alley (South Burnaby) to add to the din. The newsy paper put out by the Nanaimo Amateur Radio Club makes interesting reading. KX seems to be putting forth a good signal with his mobile which I understand is powered with a transistorized power supply. The Vancouver Club has just about polished its project for a compact 75-meter transceiver. We would like news about the DX Convention to be held in Vancouver in August. In your spare time please drop a self-addressed envelope to HR, QSL Bureau Manager, and help him clear his shelves of the QSL cards he is holding. FB has been appointed Asst. EC by APH and we presume that Ernie will try to reform the mobile gang into a revitalized unit. Traffic: KGIDT 451, VE7TF 125, ALY 37, AUF 31, AIO 3.

MANITOBA—SCM. James A. Elliott, VE1F—Amateur radio is on the upswing in Manitoba. Attendance at club meetings is going up and there is more activity among the newcomers in code and theory

(Continued on page 156)



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classes. At the last meeting of the ARRL interesting talks were given by TT and Bert Hooper, an old-timer in the broadcast field. Preparations are underway for Field Day with more interest than has been displayed for some years. Old-timers SR and NI have suffered heart attacks. GC and MS are in line for congratulations; a son to Rip and a daughter to John. KF has moved back to Winnipeg. HL still is moving. VG is busy on 10 and 15 meters with a G4ZU beam. ML was heard testing on 75 meters after a long absence. LC is back on 10 meters with a good signal. TJ has a Trapmaster in operation and TE is doing well with an NC-300 and a Viking Valiant. LJ has a Gotham beam on 15 meters. Summer static is now showing up on 75 meters with plenty of QSB and long fadeouts. Traffic: VE5YR 28, VE4GE 24, QD 22, JY 12, RB 12, EF 8, AY 7, NW 6, JQ 5, KN 5, AN 4, IF 2, JW 2.

SASKATCHEWAN—SCM. Lionel O'Byrne, VESLU —AT is wrestling with TVI. EQ and GO are sporting new DX-40s. LM is back from Southern U.S.A. and is feeling fine. WG and QL are mobile again. NR has transmitter troubles. GG has his phone ticket and is on 75 meters with 12 watts. The Saskatoon Amateur Radio Club is holding a hamfest at Saskatoon June 28-29-30. The SARC held a c.d. exercise on Mar. 17. HQ has a phone ticket for 10 meters. LE was a visitor at LU and reports the new sideband rig gets out occasionally. IG is on every morning at 0645 for skeds. SW put up a new doublet. XX is building a receiver. EW's bow-tie antenna is working good DX. ES is mobile again. Traffic: (Mar.) VE5YR 30, RE 20, WG 10, DS 7, QL 4, CB 2, EQ 2.

Standing-Wave Ratio Indicator

(Continued from page 18)

of harmonics or overtones in the transmitter output.⁹ These days most transmitters are fairly clean, but the point is mentioned on the off chance that one or two readers may beat their brains out trying to match up something that is matched all the time. Most hams don't try to match this close, but there are a few persnickety ones and we want them to be happy, too.

⁹ Grammer, "Note on S.W.R. Measurement," (Technical Topic) QST, May, 1952.

Weather-Resistant Quad

(Continued from page 43)

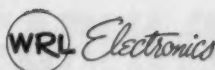
21.4 Mc. The f/b ratio at best forward gain was 18 db. The coax recommended in various articles runs from 52 ohms to 125 ohms. It was found by trial that the s.w.r. ran 3:1 with 52-ohm coax and 2:1 with 75-ohm line. Fifty-two-ohm line with a quarter-wave transformer of 75-ohm line brought the s.w.r. down to 1.3 to 1, or better, over the whole phone band.

The 10-meter antenna uses 75-ohm coax and shows an s.w.r. of 1.44:1 at 28.5, and 1.5:1 at 29 Mc. Since 52-ohm coax is used from the transmitter through the filter, Micromatch and coax switch, a 52-ohm unbalanced to 75-ohm unbalanced matching transformer (Lynmar) was used between the coax switch and the 10-meter 75-ohm transmission line.

I cannot understand or find out from anyone why the dimensions in other articles seem to work for me on 10 meters, but are way off on 15 meters. If I were to do it over again, I would make my 15-meter elements 11 feet 9 inches on each leg.

Results have been gratifying, and I think the

(Continued on page 158)



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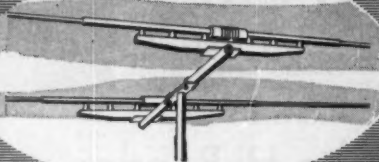
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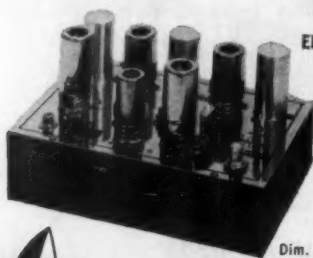


- Gain 5db, F-B 19db, SWR 1.1/1
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- Weight 68 lbs.

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For those who are interested in 20-meter operation, I might mention that a third section can be added to make a spreader length of about 12 ft. 6 inches. The small end of the last section measures approximately 0.5 inch inside diameter and 0.58 inch outside. As to sag or whip, I cannot say since I have not actually tried it myself.

Sweepstakes Results

(Continued from page 54)

K6ZCL...16,698-129-44-A-17 W5OHR...19,448-187-52-B-20
K6TOP...252-42-2-A-20 K5JCC...12,204-113-36-A-27
K5DKJ...4860-60-27-A-7
K4HEW (4 ops) 98,604-500-66-A-36

Santa Barbara
W6NTP...37,044-204-63-A-23
W6PFE/6 (4 ops) 4752-66-24-A-10

WEST GULF DIVISION

Northern Texas
W5VU...108,570-517-70-A-36
K5AUZ...41,340-265-52-A-17
K5HWY...28,688-140-51-A-24
K5BIN...25,200-140-60-A-22
W5FTY...13,294-123-36-A-38
W5STI...11,520-96-48-A-12
K5HTH...4091-51-27-A-12
W5FJP...605-16-13-A-4
W5BLU...54-7-4-A-1
K5BFP...27-3-3-A-1
K5HWK (K5HWK, K5KOB) 396-19-11-B-3

Oklahoma
W5IWL...60,060-309-65-A-24
W5PSR...54,891-322-57-A-28
K5BBA...41,088-216-64-A-26
W5TKS...18,525-242-39-B-10

Southern Texas
K5EDM...57,045-417-70-A-28

CANADIAN DIVISION

Quebec
VE2KG...6188-66-31-A-21
Ontario
VE3DYB...34,692-207-56-A-27
VE3ECH...20,910-170-41-A-27
Manitoba
VE4KN...51,072-307-56-A-14
Saskatchewan
VE5ZM...66,294-380-58-A-35
Alberta
VE6WW...20,405-159-53-A-11
British Columbia
VE7ZM...44,781-206-59-A-16
VE7WO...20,745-151-47-A-14
Yukon-N. W. T.
VESOW...275-11-10-A-1

¹ Technician Award Winner. ² W3MUK, opr. ³ K0HEM, opr. ⁴ K9DQY, opr. ⁵ K2PXF, opr. ⁶ W0ZMU, opr. ⁷ Hq, staff, not eligible for award. ⁸ W1QIS, opr. ⁹ K6JQR, opr. ARRL thanks the following amateurs for submitting their logs for checking purposes: W2s EQS JYW WPH, W3HET, W6s AM WVD, W7LKZ/4, W8s GIU WUN.

Answers to Field Day Quiz

(Continued from page 70)

1. True. Novices must observe FCC regs for their class of license on FD as well as at all other times.

2. False. Either ARRL Sections or specific indications of QTH will do.

3. False. Filament power doesn't contribute to the plate circuit power. However, the plate input to the driver stage must be added to the plate input to the output stage when computing the input to a grounded grid amplifier, because the driver stage does furnish r.f. power to the antenna.

4. True. Although his licensing privileges permit him to operate just on certain v.h.f. bands, a Technician may serve as logger on any band provided that (1) his code speed is high enough to enable him to keep an accurate log, and (2) the station is under the control of a higher-class licensee. Some Techs are excellent c.w. men too!

5. True. Orville is a Class D home station because his driveway and beam antenna are at

(Continued on page 100)

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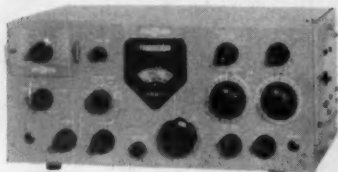
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the site of a customary fixed station location. As such, he receives a total multiplier of 1 and credit for working FD portables only. His score therefore is $50 \times 1 = 50$.

6. False. This heart-rending tale of woe is deeply touching. In fairness to the thousands who have taken part since FD's inception, however, ARRL never lists claims in *QST* when no log is on hand for inspection.

7. False. Clubs are free to use batteries but are ineligible for the 1.5 multiplier, available solely to unit-individual (Class B) and mobile entrants.

8. True. You gotta be in the field to earn any multipliers.

9. False. Although this message is in perfect form, it is worth no points to home station W9RQM. Only portables and mobiles are entitled to score credit for originating a FD Message.

10. False. Club portables can get a maximum multiplier of 3×3 or 9. See answer to question 7.



11. True. Class B or C entries with batteries and low power can earn a total multiplier of $13.5 (3 \times 3 \times 1.5 = 13.5)$.

12. True. To qualify for the independence-of-mains multiplier of 3, all radio equipment — including receivers, of course — must be independent of commercial power sources.

13. True. Despite the "slant one," W1DX/1 may be a fixed station ineligible for multipliers.

(Continued on page 162)

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H-14-450-13 Input: 12/14-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 55 watts.

H-28-450-18 Input: 24/28-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 65 watts.

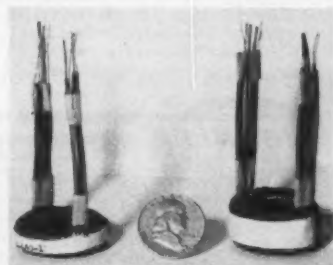
H-6-100-125-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-125-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-125-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **\$16.00 ea.**

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HD SERIES - 2000 CPS

HD-14-225-300-2-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-2-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3 1/2 ozs.). 1-10 units: **\$18.50 ea.**

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HDS SERIES - 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

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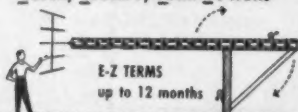
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14. False. Anyone who attaches a.c. mains to his mobile rig is no longer mobile for FD purposes. See answer to question 22.

15. False. WSQAV/Mobile handled all kinds of traffic: 69 QSOs + 25 points for his FD Message + 26 messages received + 26 messages relayed = 146 points before multipliers. $146 \times 13.5 = 1971$ points.

16. True, but the front seat of a Model A can get awfully crowded!

17. False. There could hardly be six transmitters on the air simultaneously with only five available.

18. False. Remember, traffic other than FD Messages (as defined in rule 9) may have been handled. Such work would not boost the WIEH/1 score above 433×9 or 3897 points.

19. True. Control locations for equipment operating under one call must lie within a 1000-foot diameter circle, but antennas may be at any distance.

20. False. A given entry receives credit for a consecutive operating period of 24 hours. VE1OM/1 can thus earn a maximum of 240 QSOs.

21. True. It is not a FD Message because it is not addressed to the SEC or SCM and the text does not state the number of ARFC members. Just for fun, see how many other boo-boos you can discover in this message as received at ARRL.

22. True. Rule 4 reads: "Mobile stations are complete installations including power source and antenna, mounted in or on vehicles and capable of being used while in normal motion." The 160-meter zepp reclassifies W9MFY/9 from mobile (Class C) to portable (Class A).

23. True. TCDRA is an emergency-powered home station because it is not at a site away from customary fixed-station locations. Since Class D participants receive no multipliers, TCDRA can score 250 points at best.

24. False. This was a unit-individual setup until the third operator sat in, whereupon it automatically became a Class A group ineligible for the battery multiplier.

W3EIS/3's score is $650 \times 9 = 5850$ (not $650 \times 13.5 = 8775$) points.

25. True. Compute LARA's mobile aggregate as follows:

	QSOs	Tfc	Mult.
W1CUT	20 + 25 = 45	$45 \times 13.5 = 607.5$	
W1FXK	25 + 1 = 26	$26 \times 9 = 234$	
W1ICP	30 + 2 = 32	$32 \times 4.5 = 144$	

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(Continued from page 82)

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YL-OM Contest Results

(Continued from page 81)

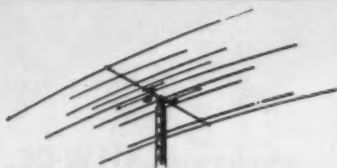
K5JCC.....0 6 68*	KP4KD.....6 6 45*
K5IID.....5 5 31*	SM7CAB.....2 2 5*
W5MPE.....2 2 5*	OH2RD.....1 1 1*
	VE2AQO.....20 11 275*
K68XA.....45 29 1,631*	VE2IL.....13 9 146*
W6JVA.....51 27 1,377	VE2AWR.....9 7 79*
K6CQM.....23 14 403*	VE3DYJ.....21 13 273
K6RFT.....15 8 150*	VE3RN.....14 11 193*
K6LZU.....6 6 36	VE3CKR.....10 7 88*
	VE3ENL.....0 7 79*
W7ESN.....16 13 260*	VE3DLS.....7 6 53*
W7TDT.....19 13 247	VE3DDU.....8 4 40*
W7FKF.....7 6 53*	VE4SX.....19 11 261*
K7BSR.....7 5 44*	VO2NA.....16 11 176
W7BLH.....5 5 25	

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W8FNI.....46 28 1,610*	WINEP.....72 35 3,150*
W8AQ.....49 26 1,593*	WIFYF.....45 29 1,631*
W8QHW.....42 25 1,313*	K1DLQ.....49 27 1,323*
W8BVF.....43 22 1,183*	W1GKJ.....41 25 1,281*
W8IBX.....38 24 1,140*	W1BAB.....43 23 1,236*
W8WVU.....37 21 971*	W1AF.....40 20 920
W8VGR.....35 20 875*	W1TTI.....43 20 860
W8KPL.....30 18 675*	W1NLM.....19 14 266
W8OCA.....33 18 594	W1NJJ.....13 11 179*
W8UPA.....27 17 459	W1LQJ.....12 7 105*
W8PYX.....26 15 390	
W8KTR.....17 13 276*	K2DSW.....63 31 2,441*
W8AYV.....16 8 160*	K2MWK.....39 23 1,121*
W9LNQ.....48 27 1,620*	W2MCO.....37 22 1,017*
W9BZW.....47 27 1,586*	K2TSW.....30 21 788*
W9DYG.....45 27 1,519	K2SIF.....31 20 775*
W9RKP.....41 26 1,335*	W2RHM.....35 17 741*
W9CHD.....35 21 919*	W2WPH.....37 16 740*
W9NLF.....34 21 893*	K2GTC.....26 16 520*
W9SZR.....35 19 665	W2VUM.....17 12 255*
W9YDQ.....28 17 595*	W2OVF.....18 11 248*
W9OT/6.....24 17 510*	K3PTU.....21 10 210
K9DWK.....26 14 455*	W2CVW.....13 12 156
K9DWO.....20 17 425*	K2JVE.....9 8 90*
W9GWO.....20 11 275*	K2UUT.....2 2 5*
K9DQI.....32 19 760*	
W9GAX.....25 16 500*	W3HWU.....67 34 2,848*
W9EJF.....26 21 546	W3BVL.....50 24 1,500
K9KXM.....19 12 309*	W3BST.....43 25 1,344*
W9TCA.....18 11 248*	W3EIV.....43 23 1,236*
W9GXO.....16 12 240*	W3ARK.....45 27 1,215
W9SGG.....10 9 112*	W3BQA.....39 22 1,098*
K9IWK.....8 7 70*	W3ZHQ.....34 22 935*
W9BLH.....8 5 40	W3QLW.....34 20 850*
	W3MDO.....28 23 805*
DL1QT.....6 7 53*	W3YLL.....24 17 509*
F8BCR.....20 15 300*	W3BXG.....24 16 480*

(Continued on page 166)

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- Exceedingly low noise figure.
- High signal to noise ratio.
- Freedom from spurious responses:
- Minimum cross modulations
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(Transmission on 100 mc.)
Use Model CC 100
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Technical data on coils specified in QST and Handbook.
Standard coil series ideal for experimenters and designers.

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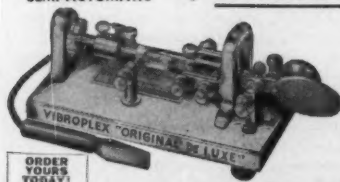
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166

W3FOX.....	27	16	433	W7GVG.....	17	12	194
W3JKE.....	16	15	240	W7KOL.....	4	4	20*
W3KQD.....	16	11	220*	W8AJW.....	109	45	6,131*
K1HIA.....	80	37	3,700*	W8BVF.....	45	28	1,575*
K1LAG.....	73	34	3,065*	W8IEC.....	52	28	1,456*
K1DKE.....	59	32	2,360*	W8OYL.....	34	10	770*
K1ASH.....	49	26	1,593*	W8FFP/3.....	36	17	765
K1HNC.....	40	24	1,470*	W8CEL/W.....	35	17	744*
K4RWX.....	44	20	1,100*	W8WNK.....	26	20	650
W4JUU.....	36	23	1,035*	W8IBX.....	21	14	294
W4EFY.....	37	22	814	W8TEY.....	21	14	294
K4OVE.....	26	15	488*	W8WWF.....	12	10	150*
K4HEX.....	21	17	446*	K8ESY.....	8	7	70*
W4ZCD.....	28	12	420*	K8IZM.....	8	6	60*
W4KZF.....	22	12	264	W8QHW.....	5	5	31*
W4MMD.....	11	6	66	W6JXN.....	45	24	1,350*
W4WZT.....	10	4	40	W9YT.....	47	25	1,175
W4ZPR.....	4	3	15*	W9POY.....	42	22	1,155*
W5VLM.....	80	38	3,800*	W9NLF.....	39	22	1,073*
W6VWV.....	66	32	2,645	K9BLY.....	33	24	792
W5ZAR.....	64	32	2,560*	W9YCI.....	32	17	680*
K9CLI.....	58	27	1,958*	K9DWG.....	24	16	480*
K5BBA.....	47	24	1,411	K9DWK.....	21	14	368*
K5EJC.....	52	25	1,300	W9LNQ.....	16	12	240*
W5NYN.....	36	21	945*	K9AZX.....	18	10	225*
K5MRQ.....	35	25	875	K9IGF.....	12	10	160*
K5HWY.....	42	20	840	K9DZF.....	13	6	78
W5ZAL.....	44	19	836	W9RYL.....	9	4	36
W5JD.....	33	19	627	W9EBB.....	5	5	25
W5FHL.....	20	18	450*	W9MWR.....	3	3	11*
K5IHD.....	19	16	380*	W9TOM.....	52	24	1,500*
W5GB.....	21	17	357	W8GQY.....	50	28	1,400
W5ULN.....	21	13	341*	K9ATS.....	45	23	1,294*
W5OUH.....	21	12	315*	K9AAF.....	40	19	950
K5EDM.....	19	13	309*	W8GAX.....	36	21	945*
K5IHD.....	18	11	287*	K9BWN.....	37	16	865*
W5KEA.....	16	14	280*	K9IGO.....	38	22	836
K5JCC.....	10	10	125*	W8SKF.....	37	17	786*
K5MWZ.....	11	9	124*	K9GJR.....	29	20	725*
W5AWT.....	9	9	81	W8BWJ.....	25	19	594*
W6FKH.....	83	33	3,424*	W8BLH.....	28	21	588
W6JVA.....	82	34	2,788	K9ENM.....	24	16	540*
W6FGJ.....	73	33	3,011*	K9HQX.....	27	13	439*
W6PVD.....	54	29	1,958*	W8AQE.....	26	12	390*
K6MPX.....	53	27	1,789*	W8USP.....	23	12	345*
K6EIE.....	38	26	1,235*	W6YCA.....	22	11	303*
W6WVG.....	12	12	144	K9KQY.....	20	12	300*
W6MTJ.....	11	9	124*	W8CBF.....	21	10	210
K6CQM.....	12	5	75*	K8AJW.....	15	9	169*
W6OIL.....	9	7	63	K8BLX.....	10	9	113*
K6SXX.....	6	2	15*	K8LFA.....	11	6	83*
W7SPK.....	104	36	3,744	W8BHT.....	8	4	40*
W7BCE.....	51	29	1,848*	K8BBLX.....	26	17	442
W7GDS.....	50	29	1,812*	KP4KD.....	25	16	500*
W7ESN.....	30	22	825*	VE2UN.....	30	19	570
K7BSR.....	14	13	227*	VE3DYB.....	17	12	255*
				VE4SX.....	19	5	63*
				VO2NA.....	17	13	221

The following logs were submitted for log-checking purposes only:

YL C.W. — W1YPH, W4s BLR, KZT, PPQ; K6KUP, W6UXF, W7s DIF, FRS, PY4AMX.

YL Phone — W1YPH, K2AGJ, W3MDJ, W4s PPQ, SGD; W5s RYX, Y8J; K6KUP, K8HEU, CR7LU, KL7ALZ

OM C.W. — W2s CUE, HAE, HPK, IVL, UAP; K2s SEK, VVL; W4JII, W6s BIL, HWE, JH, QCQ, ZD; W7s GVG HCW; W8s BZX, TEY, WNK; K9BLY, OH3s, NY, TH; OZ7SN, VE2AJD, VE6SX, SM5BTU

OM Phone — W1s CUE, GMI, JSS, ZKQ; W2LKW, W3AKG, W4WLM, K5MYB, W8FGS, VE3JK

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VANGUARD, TC-108

- Power Gain: 2000 (33 db).
- Noise Figure: 2.1 db.
- Rejection of Signals at Intermediate Frequency: 90 db.
- Image Frequency Rejection: 65 db.
- Intermediate Frequency output: 14.4 mc.
- Rejection of all other Spurious Responses: greater than 65 db down.
- Matched Input Impedance: 50 ohms.
- Output Impedance: 50 ohms nominal.
- Output Bandwidth: 300 kc at 1/2 power points.
- Tube Complement: 417A/5842, 6BQ7A/6BZ7, 6CB6, and 12AT7.
- Power Requirements: (a) 6.3 volts at 1.3 amperes. (b) + 150 volts DC at 60 ma. regulated.
- Dimensions: 9 1/2" x 5" x 2 1/2" shielded base. Maximum seated tube and tube shield height 2 1/4".

Write for free TAPETONE instruction booklet on how to assemble equipment for tracking U. S. Satellite.

New Regulated Power Supply
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3 Bands, 10-15-20
Gain 5.5db, F-B 20db, SWR 1.5/1
Max. element length 24 ft.
Aluminum construction
Boom 6 ft.

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ANTENNA SWITCH

MODEL DKC-TR

The DKC-TR features a gain of zero db at 60 mc to plus 6 db at 3.5 mc. Can be close-coupled to the transmitter for easy, compact installation with a Dow DKF-2 connector. Instantaneous recovery, powered from transmitter accessory terminal. Matches 52 and 72 ohm impedance without insertion loss. Handles one KW with ease.

POWER SPECS: B plus 125-150 volts, consumption at 125 volts, 6.2 mls; 450 amps at 6.3 volts; uses 6AH6 tube.

GUARANTEED! Fully backed by factory warranty for unit replacement. **PRICE, \$12.50** (price subject to change without notice).

DOUBLE MALE-CONNECTOR (DKF-2) for mounting relay directly onto output of transmitter. **\$1.45**

See your local electronics dealer or write direct for complete specifications.



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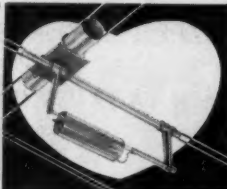
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- ★ Synchronous motor driven matching systems
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One K.W. Gamma match for 6-10-15 and 20 meters. In 6, 12 or 115 volt A.C. \$19.95
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DA 5-1911

Crystals

(Continued from page 22)

crystals in the FT-243 type holders are suitable, but those in the FT-241A type holder are not. Likewise, some crystals of current manufacture mounted in holders that are similar externally to the FT-243 have plated electrodes, as do the small metal-can type assemblies.

Last but not least, don't try to grind your crystals too close to the edges of the Novice bands. Although a crystal is a remarkably stable device, its frequency can be changed — by temperature, by the kind of oscillator circuit in which it is used, and by the tuning of that circuit. Stay at least a couple of kilocycles away from a band edge — and make sure you know where that band edge really is before you try crowding it!

Working WLP

(Continued from page 69)

G3KVA, SM7BPO, FF8AD, EA8BF, KL7CDF, KH6AHQ, HC1LE, OA4AS and 4X4IX. Before I had even been able to realize it, I had worked all continents, and during the same period I had also picked up another 21 states, bringing the total up to 41 states worked.

Things were going swimmingly. I was getting glowing reports from all over, the QSL cards were rolling in under the door, my bug was purring from its insulated box; and I had wonderful visions of certificates all over the wall of the shack: WAC/WLP, WAS/WLP.

I had a barrow full of DX cards, and I was beginning to firm up a beautiful vision of the DXCC/WLP certificate and where I would put it in the shack and the party I would have to celebrate it.

The landlord thought it was quite an accomplishment, too.

I would like to amend the qualifying rules for the WLP certificate to include: "An eviction notice will serve in lieu of landlord's verification."

I was watching Alfred Hitchcock's program on TV, the other night, and he added at the end of his play, this little gem: the perfect murder, like the perfect marriage, owes its success to not getting caught. If Mr. Hitchcock should ever present a play about ham radio, he can add to the juicy bit: Working WLP.

LOOKING FOR A TOWER?

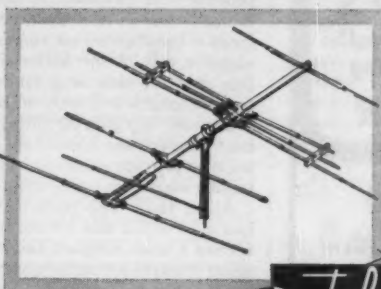
Check the ad on page 132 of QST for Feb. — or send for catalog.

KTV Towers, Box 294, Sullivan, Ill.



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10,001-15,000 KC	.01%	\$3.90
15,001-20,000 KC	.01%	\$6.50

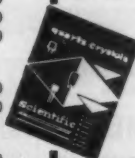
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Ten sizes to choose from! 22 ft. to 100 ft.
As low as \$104. Easy terms available.

VESTO TOWERS HAVE: No guy wires! No cables! No moving parts!

VESTO TOWERS OFFER YOU:

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Now! Tilt antenna for easy accessibility! Tilts heaviest antennas! Holds in any position!

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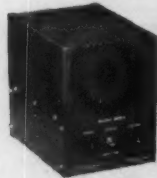
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- Use with any 20 meter exciter (10B, 20A, DX20, DX-40, etc.).
- Power output—10 Watts RMS.
- Low Impedance input and output.
- Power may be obtained from exciter or from separate power supply.
- Size only 5x7x7 inches.

PRICE:

Model 600A Complete, less Power Supply\$49.95
Model PR 600A Power Supply for above\$39.95
Model 600A-PR Complete with Power Supply\$87.50

P & H ELECTRONICS, INC.

424 Columbia St.

Lafayette, Ind.

170

Mobile Power Unit

(Continued from page 57)

9 X 10-inch walls of 1/8-inch aluminum sheet. These walls were fastened to the sides of the chassis on which the remainder of the components were mounted. In the circuit of Fig. 3, the collectors (which are connected to the outer shells of the 2N278s) are connected directly to the negative side of the battery. In systems where this negative side is grounded, the transistors may be mounted directly on the aluminum walls. Otherwise, very thin insulating material should be used between the transistors and the aluminum walls to provide electrical insulation while maintaining maximum heat conductivity.

All of those who participated in this project² had a lot of fun and we are now looking forward toward a more compact and efficient transmitter using transistors in at least the modulator, leaving the high-voltage supply free to deliver its full output to the r.f. section.

¹ The transformers mentioned in the text may be obtained from the following addresses:

Powertran Corp., 26320 W. 7 Mile Rd., Detroit 19, Mich.
Meteor Transformer Mfg. Co., 8877 Hubbell, Detroit 28, Mich.
Osborne Transformer Corp., 948 East Lafayette Ave., Detroit 7, Mich.

² It is interesting to note that the conclusions drawn from this independent investigation of transistor-type mobile supplies closely parallel those of the work done by WIYOR described in the April issue. — Ed.

Strays

Another newspaper gem—the transmitter described as being capable of 25 horsepower.

KN1DTR and KN1DER can't claim a single QSO marathon record, but they do seem to have established some sort of record for the amount of ragchewing they have done together over a period of time. Between Jan. 8, 1958, and April 22, 1958, they have QSOed some 135 times with a total time on the air of some 259½ hours. All operation has been on the 3.7 Mc. band.

W1BZM, a QST author of articles on radiological monitoring, has developed a method of identifying cancer-linked steroids by means of mass spectroscopy, thus reducing the time required for diagnosis.

A few of the gang are fed up with the "coincidence" Strays, but here's one we couldn't pass up. W4ACB is S. M. Douglas, and K4ACB is S. M. Douglas, jr. — both of the same QTH.

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PORTLAND RADIO SUPPLY CO. 1234 S. W. STARK STREET
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Going Mobile?

- Want to work 10-15-20 without stopping to change bands?
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- Want a mobile antenna that never requires adjustment?

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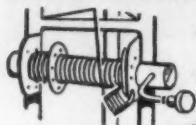
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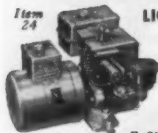
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AC Plant 700 Watts — 115 v. 60 cyc.
Powered by a rugged 2.2 hp. easy starting
Briggs gas engine. No wiring necessary;
just plug in and operate. Plenty of current
for receivers, transmitters, antenna motors,
emergency lights, etc. which require up to
700 Watts. Ideal for radio amateurs, Civil
Defense, trailers and camps. Complete with
Voltmeter and built-in winding to charge 6
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fully radio shielded. Hams report less hash than on commercial
power line.

Item 24. Wt. 75 lbs. Be prepared if war or storms
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600 Watt Plant (Item 44) same as above but with
larger engine and greater capacity. \$169.95

1200 Watt Plant (Item 45) same as Item 24 but with
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We make all sizes up to 25,000 Watts. Write for information.

Send 10¢ for Big New Catalog. Free with order.

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**GET THIS
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**NC-300
PLUS
2400-HOUR CLOCK**
\$39.00
down, without trade-in.
Cash price \$300.00
Both for the price of
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Special Offer... Limited Time Only! FREE 2400-Hour
Electric Time Clock With Every NC-300 Purchase!

Fine quality clock gives you 2400-hour time
every hour of the day in every time zone all
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Direct reading, no computing or calculating
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NC-300 now while this special offer lasts...

this is a limited time sale! Clock will be mailed to you and,
guaranteed by the clock manufacturer.

ROGER'S RADIO CO. 1648 WAZEE ST.
DENVER, COLO.

How's DX?

(Continued from page 87)

Ten Years Ago in "How's DX?" — An attempt is made to catalog DX hog species systematically in the introductory paragraphs of your June 1948 column. — Eighty-meter WACs are the current rage with Ws 5KC and 7KVU filing their claims. W4BRB's score of 45 appears to lead the 3.5-Mc. countries-worked race. CT3AB, FA8BG, FM8AD, HC1JB, J3AAD, K84AI, MD5KW, UA0KAA and VR5PL are among items most sought after on 80. — Forty is rather quiet DXwise but 20 c.w., buoyant as ever, distributes AP5B, CSYR, CZ2AC, EK1AA, FESAB, FT4AN, HLI1AE, MD5PS, M16ZI, PK6SA, UA1KEC, V84WL, Ws 2MWV/C9 6YOT/C6 0MCF/C1 0OZW/K86 0TKK/VK9, XSV1KE, ZC6s AC NJ and ZD8B favors. — Phone on 28 Mc. still is profitable: AR8AB, FF3JY, HLI1AN, HZ1AB, J2s ACS HYS SC8, KG6AW/VK9, MD6GW, PK2RK, VR6AA, XARC and ZC1AF are there. Even 11 meters comes to the party with EL5A, J9AAI and OX3GE. — According to "Tidbits", VU2PB is back home attending to his Andaman Islands QSL backlog. — A striking photograph of His Worship the Mayor of Coventry, England, in full robes of office — OC G6WX to the DX gang — graces our DX pages.



June, 1933

... "If successful we want to make it an annual affair" was how F.E.H. concluded his first Field Day announcement of twenty-five years ago. It was successful, apparently!

... George Grammer discussed parasitic oscillations in neutralized amplifiers, a couple of broadcast engineers described some duplex portables, and James Lamb told how to convert standard superhets to single signal receivers.

... Power supplies were treated in one article on transformerless plate supplies and in another article on getting transmitter power from low-voltage d.c.

... A loaded antenna for restricted space was described by WIEDY. WICBD described a tube checker and circuit analyzer.

... Ev Battey reported on the 1932 Third All-Section SS Contest, in which the highest score was 56,420 points. No QSO totals were reported, but one station worked 63 out of a possible 69 ARRL sections! And this SS ran not for two separate weekends but for 10 straight days!

... DX notes: Using four 01As, W6FTV worked F8BD on 3.5 Mc. Z81H worked all continents in 2 hours and 2 minutes.

VACATION IN

FABULOUS NEW YORK CITY!

VISIT THE WORLD-FAMOUS SIGHTS—

- Statue of Liberty
- United Nations
- Radio City
- Empire State Building
- "Ham Headquarters, USA" (Bring along your old gear, and save enough on a trade for part of your trip.)
- Chinatown
- Ebbs Field (For Rent)
- Harrison Trade-In Center (Greatest array of bargains in like-new equipment.)

FREE!

A postcard to Bill Harrison, W2AVA, 225 Greenwich Street, New York 7, will bring you an illustrated Visitor's Guide, calendar of Summer Festival events, map, etc. **EASY PARKING**

You're on the air ... when you use the New MOSLEY "Trap-Vertical"!

- ▶ Automatic bandswitching—10 thru 40!
- ▶ Low SWR all bands—1.5/1 or better!
- ▶ Weather-proof traps!
- ▶ Mount on ground or roof-top!

Model V-4-6
only \$27.95
AVAILABLE NOW!!!
80 M. Base Loading Coil.
Model D-4BC \$14.95

Requires no tuning! Mounts in limited space. All aluminum construction. Use 52 ohm feed line. Complete with guy rope, hardware and instructions.

Mosley Electronics, Inc.

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All Standard Kits Wired, Tested and Fully Guaranteed. We do Complete Installation of Mobile and Fixed Stations. "Service is our Business, Satisfaction our Reference."

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XMTRS FOR 160 TO 2 METERS

TECHNICIAN—NOVICE—GENERAL
or Special Freq. 500 KC. to 160 MC.



MOD. 240 WITH MOBILE CONNECTIONS & AC SUPPLY. 1.6 to 30 mc. with plug-in coils. For Phone & CW, Novice, General, CAP, Industrial. Complete with 8 x 14 x 8 cabinet; tubes, 40 meter coils & crystal. Wt. 30 lbs. \$79.95.
80, 20, 10 meter coils \$2.91 per band. 160 meter coils \$3.60.

MODEL 130 FOR 120 to 130 WATTS—
NOW \$169.50

MODEL 242 FOR 6 METERS OR 2 METERS—45 WATTS INPUT—6146 FINAL. Complete with mobile connections, A.C. power supply, tubes, xtal. Xtal mike input. Uses 8 mc. xtals or Lettine VFO. Swinging link matches 52—300 ohm antennas. Same cab. as 240. \$89.95.

TECHNICIANS! The 6 meter 242 is your ideal transmitter, designed especially for 6 meters. Check these features. 45 to 50 watts input. Three RF stages with 6146 high efficiency straight-through final. 100% plate modulation with push-pull modulator. High capacity double tuned circuits for maximum TVI suppression.

VFO-\$49.95—ANT. TUNER \$20.00 LESS COILS
Send full amount or \$25 with order—balance C.O.D.

LETTINE RADIO MFG. CO.

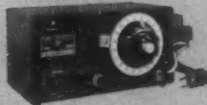
62 Berkeley Street Valley Stream, New York

I CAN THANK HAM RADIO FOR MY NEW CONVERTIBLE



Like most hams, I've been tuning and adjusting transmitters and receivers for years. When a W9 told me about the boom in 2-way commercial and public-safety radio—and of the high income he was earning in mobile-radio maintenance—it seemed a wonderful business for me. So I sent for Lampkin Laboratories' booklet "HOW TO MAKE MONEY IN MOBILE-RADIO MAINTENANCE" and learned about the hourly rates . . . contract terms . . . and monthly income in that field. Now I'm in the business—and driving a new convertible! The coupon at the bottom of this ad can lead to the same results for you. Better mail it today—while it's fresh in your mind!

You can start your own mobile-radio maintenance business, too—from your own shack. With Lampkin's easy payment plan you'll need a surprisingly small investment. For your free copy of "HOW TO MAKE MONEY IN MOBILE-RADIO MAINTENANCE" send coupon today!



LAMPKIN 105-B
MICROMETER
FREQUENCY METER
Range 0.1 to 175 MC
and up
Price \$220.00 net



LAMPKIN TYPE 205-A
MODULATION METER
Range 25 to 500 MC
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Self-powered,
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for 6 and 2 meter operation
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ONE OF THE FINEST CODE COURSES AVAILABLE
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Ppd. in U. S. Possessions and Canada. — Penna. Residents
3% tax. Dual Track 7" 1200' tape. Recorded at 3 3/4 IPS.
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PUZZLED?



Are you having troubles? Let the latest
edition, Volume Five, of ARRL "Hints &
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you grief and time. You'd be surprised at
the shortcuts and tips listed in this book.

As its cover says, it is a symposium of
333 practical ideas for the station and
workshop, and the Ready-Reference In-
dex, a new feature, will help you find
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The American Radio Relay League
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FOUR OR FIVE BANDS WITH ONE FEED LINE, ONE ANTENNA



THE hy-gain INSU-TRAPS

Large diameter, Hi-Q trap circuits, which maintain
true isolation for maximum efficiency. Traps are light
weight (8 oz.), completely weatherproof and handle
1 KW of RF power. Trap circuit coils wound on high
impact styron forms which also form dielectric for
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carbon activated polyethylene cover and cap. Detailed

instructions included for constructing your own 4 or
5-Band doublet.

THE hy-gain DOUBLET KITS

Include #14 copper clad steel antenna wire, 7" por-
celain end insulators, pressure clamps and 88 ft. of
KW Amphenol twin lead, with complete instructions.
When completed, 4-Band Doublet is 60 ft. overall
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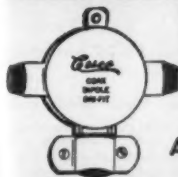


Here, in less than 120 square inches of desk space you can have a complete amateur station including the T-90 transmitter, R-9A receiver and the now famous Z match. More power and sensitivity per square inch than offered in any other package. See the H-W Bandmaster line today or write for details:

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COAX DIPOLE DRI-FIT CONNECTOR



An ideal connector for dipole antennas. Install in minutes. Completely moisture proof. For use with coax cables RG-8, RG-58 RG-11, RG-59 and 300 ohm twin tubular. Has **eye pull up** for inverted V's. One piece aluminum alloy construction. Weighs only 2 oz.

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**FOR YOU
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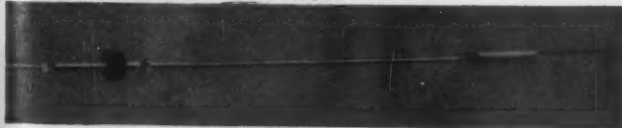
\$4.95 Postpaid in U.S.A.
Bracket for Steering Column
30¢

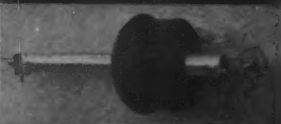
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BOX 76 STAR, IDAHO

Kits and Doublet Traps!

AND LOW SWR...





Insu-Traps for 10-80M. traps only, per pair	\$12.50
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Now . . . Go Sideband . . . Inexpensively !

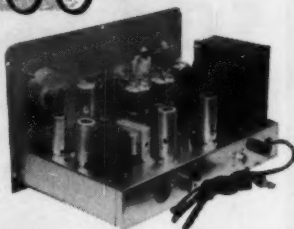
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Sidebander DSB-100



100w PEP DSB Input
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3 Modes
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SIDE BAND



Completely Bandswitching 80-10M

\$139.95 cash
\$14.00 down **Only \$1155 per mo.**
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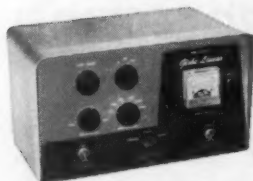
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w/t: \$24.50
Kit: \$19.95

Continuous band coverage 3-9mc and 12-30mc, covering the popular MARS and CAP frequencies. Designed for DSB, AM or CW, adequately protected for TVI, and adaptable for converting your present AM equipment to Sideband. Standard crystals and regular VFO can be used. Min. 35 db carrier suppression on all bands. If one sideband QRM'ed, receiving operator can simply switch to other. Will drive any of the popular commercial linears for sideband service. 3-stage RF section allows straight through operation for maximum efficiency. Internal tone generator facilitates tuning. Pi-Net output, 52-600 ohms. Speech clipping and filtering assures powerful communication punch and narrow band width. 600V power supply has ample reserve for external accessories. Provisions for Antenna Relay Control.

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IDEAL COMPANION FOR THE
SIDE BANDER AND THE SCOUT!



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per mo.

or \$124.50 cash

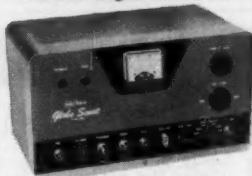
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Complete with well-filtered power supply, operates Class B or C, with grounded grid final. 200w input operated AM Class B, 300w DC input, or 420w PEP input, Class B linear SSB or DSB. Requires 15w RF driving power. 300w Class C for CW (18w driving power). Pi-Net output circuit covers 80-10M bands, matches loads 30-150 ohms. 52 ohm Pi-Link coupled output on 6M. Extensively bypassed, filtered and shielded for TVI.

Globe Scout 680A



\$990
per mo.

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Kit: \$99.95
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65 watts CW; 50 watts fone Plate Modulated

A compact, self-contained bandswitching transmitter for operation of the 6-80M bands, with built-in power supply. High level modulation is maintained. TVI-suppressed cabinet. Pi-Network output on 10-80M; link-coupled on 6M, matching into low impedance beams. New type, shielded meter. Size: 8x14x9, with the bright new "Forward Look". Works like a charm with the new WRL Globe Linear, LA-1. Write for complete information.

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AMATEUR Paradise Vacation Spot: Livingstone Lodge and Lodge Cabins, Mastodon, Enfield, N. H., gateway to White Mountains. For couples and Family Groups, 100 acres, eleven buildings, Main Dining Lodge, fine sandy beach, boats, sports, skiing, Dartmouth golf & tennis, churches, LaSalette Shrine, Fishing, 29th year, 75 and 40 meter tie in Lobby. American plan, \$40 per week up. Children half that. Booklet, Write Al Q. Livingstone, W2QPN 12-01 Ellis Ave., Fair Lawn, N. J.

"PIG-IN-A-Poke"? Not if you visit Ham Headquarters, USA, and pick your choice from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-In Center. Greater values, because tremendous turnover means lower overhead! Terms, Trades. Send us postcard for mouth-watering photograph and price-list. For the best in new and used equipment it pays to come to Ham Headquarters, USA! BCNU, Bill Harrison, W2AVA, 223 Greenwich St., New York City.

QSLST SWLS? Finest and largest variety samples 25¢ (refunded). Calhoke (Summer) \$5.00 postpaid. "Rus" Sakers, W8JED, P.O. Box 218, Holland, Michigan. (Religious type QSLs on request).

QSLs, Neat, Attractive. Samples 10¢. Woody's, Box 161, Asher Sta., Little Rock, Ark.

QSLs—We've printed a million! Samples 10¢. VYS QSLs, 1704 Hale St., Ft. Wayne, Ind.

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QSLs-SWLS, High quality. Reasonable prices. Samples, Bob Teach-out, W1FSV, 204 Adams St., Rutland, Vt.

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QSLs, Twenty for Dollar. Curley, 200 Hufington Rd., Chester, Pa.

QSLs, SWL's, VHF's, XYL-OM's. (Sample assortment approximately 94¢.) Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fatalitous, DX-attracting, prototypal, snazzy, unparagoned, cards, Rogers, K8AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!).

QSLs, Taprint, Union, Miss.

QSLs, Plain and fancy samples 10¢. Fred Leyden, WINZJ, 454 Proctor Ave., Revere 51, Mass.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not, let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Williams Jr., KX6GMT, Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

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QSLs. We've printed a million. Samples 10¢. VYS QSLs, 1704 Hale, Ft. Wayne, Indiana

DELUXE QSLs, Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

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QSLs-SWLS, 100, \$2.50. Samples 10¢. Q8U file cards, \$.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLs-SWLS, Samples free, Spicer, 4615 Rosedale, Austin 4, Texas.

QSLs "Brownie," W3CJL, 3110 Lehigh, Allentown, Penna. Samples, 10¢ with catalogue, 25¢.

QSL Special. Free sample. Nat Stinnette, W4AYV, 1 matilla, Fla.

QSLs-SWLS, Samples 10¢. Malgo Press, 1937 Glendale Ave. Toledo 14, Ohio.

QSLs, Sharp! 200 one color, glossy, \$4.75. Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, 4422 Marquette Dr., Ft. Wayne, Ind.

QSLs of distinction. Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Penna.

PHOTOGRAPHIC QSLs-SWLS at reasonable prices, plus distinctive assortment by Mike. Samples 10¢. K6GJC Press, 678 South Cloverdale, Los Angeles, Calif.

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QSLs, Samples, dime. Printer, Corwith, Iowa.

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RUBBER Stamps for hams, sample Impressions, W9UNY, C. W. Hamm, 542 North 93rd St., Milwaukee, Wis.

FREE Samples. QSLs-SWLS. Baekus, 703 Cumberland St., Richmond, Va.

QSLs: Cartoons, colors, something different. Samples 20¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLs, Samples, dime. Eddie W. Scott, W3CRX, Fairplay, Md.

QSLs, Glossy. Samples 10¢. WIOLU Press, 30 Margoun, Medford, Mass.

QSLs, \$4.65 per 500. Free circular for details. K9EUF, Vorderberg, 1839-46th St., Rock Island, Ill.

SELL S-85, with built-in Hallcrafters 8-meter and ant. trimmer. Works good, in fine condx, \$50. F.o.b. Brownwood, Texas, K5DBK, 1901 Elisabeth Drive.

VACATIONS. Modern housekeeping cabins, American plan; ham with my equipment. Lighthouse Lodge on Big McKenzie Lake, Spooner, Wis. Tony, W9JZC.

IMMEDIATE answer to your request for new listings of reconditioned equipment and our new complete amateur catalog. We give you a realistic deal always on all brands, new or used. Check our offer first. We deal quickly, easily and on a personal basis. Our terms tailor-made to your budget. Stan Burghardt, W9BJV, Burghardt Radio Supply, Watertown, So. Dak.

RECEIVERS and transmitters repaired by experts. Authorized factory service. Ham prices. M. T. C., 239 East 149th St., Bronx, N. Y. Tel. Mo 5-1100.

DON'T Fall! Check yourself with an up-to-date, time-tested "Sure-Check Test." Notice \$1.50; General, \$1.75. Amateur Radio, 1013 Seventh Ave., Worthington, Minn.

KWS-1, \$1400; W3DZZ Beam, \$100; Gonset 66B, \$150. W. Boyce, W2HRI, Tel. N.J. DE 4-7207; NYC, BR 9-3256.

WANTED To buy: Collins 32V3 and Collins KWT transmitter. Will pay cash, but equipment must be clean and in good condx. Prefer to buy from some one in New England so that equipment can be inspected before purchase. Bob Anderson, W1LBA, 428 Central Ave., Milton, Mass. Tel. BLuehill 8-9337 evenings.

MOBILE Batteries, Vite-Plate Special Service Types, 6 and 12 volt, for all cars. Used by Police and Fire Departments. Free data. Corneli Communications, 1340 Ford Rd., Cleveland 24, Ohio (Paul, W8EFW).

SELL: HRO50T1 with A,B,C,D coils, \$245. Send for list of parts for swap or sale. M. Marshall, 455 Washington Ave., Dumont, N. J.

TWO-WAY Communications, Mobile, Industrial, Aviation. Free catalog. RCE, 520 S. Virginia, Reno, Nev.

WANTED: Unused electronic tubes, commercial gear, lab test equipment and components. Will pay cash or swap for choice ham gear, etc. Write for Harry's "Green Sheet", check full of bargains in ham gear, tubes, relay racks, transformers, etc. Barry Electronics Corp., 512 Broadway, New York 12, N.Y.

HAM Licensees, Resident courses, Novice and general classes, 3 evenings weekly, Delahanty Institute, 117 East 11th St., NYC 3, GR 8-6900.

"THE Saga of Telephony" LP recording & brochure, Historical, \$3.75. Ralph Graham, W4RXJ, Box 3556, Arlington 3, Va.

GLOBE-CHIEF, excellent condition, \$40; Knight VFO, \$20. Oscar Kaelin, W2AKN, Rd. 2, New Paltz, N.Y.

COAXIAL Cable, 53 ohms, 100 ft. \$4.35. Postpaid. Satisfaction guaranteed. Van Dick, Riverlawn Drive, N.J.

88B - Latest diagram, template, 3 xfrms, disc ceramic & mica condensers, colls, L1 thru L7 for "W2EW Special" (Mar. 1956 QST), \$10.95 postpaid. A. Vitale, W2EWL, E. Glen Rd., Denville, N.J.

"416B Owners, brass mounting plate, machined 3.4 - 40 hoie, \$2.50. Robert B. Flint, W9BYV, RR 2, P.O. Box 290A, Bridgeport, Ind.

VRCQ QSL to W4TAJ with self-addressed envelope.

CALL plates, Deluxe 2" x 1" black phenolic laminate with engraved white lettering. Only \$3.00 p.p. Polished Plexiglas base, \$1.00 extra. L. J. Products Co., P.O. Box 122, Downers Grove, Ill.

FREE Flyer, DX QSL Radio Coop., Box 5938 Kansas City 11, Missouri.

CODE Tape wanted: Will buy or rent code tapes for TG-34-A code keyer, W3J8N, Paul Hoffman, 1733 Kalima Rd., N.W., Washington, D.C.

HARCOS in Sandusky, Ohio, for your best deal in Ham Gear, National, Hammarlund, Hallicrafters and WRL Globe transmitters, Hy-Gain and Mosley beams. 1725 Columbus Avenue.

CANADIANS! NC-300 for sale, 16 mos. old; in excellent condx, \$425 cash, no deals or swap unless you can throw in the XYL to boot. H.H.G. McKendry.

PANADAPTOR, New Model PR-1, only \$99; brand new tubes: 807A, 812A, 826 (each), \$1.50; 809A, \$1.50; 6146A, \$2.95; AR-22 rotor, \$12; Morrow 5BR-1 converter (10 thru 80), \$29; Mosley 20-meter, 3-el. beam, \$19; B&W 72H omni Matchmaster (8WT bridge-dummy), \$19. All in gud cond. K2HKP, 48 Thatcher Ave., Buffalo 15, N.Y.

WALKIE-Talkie (pair), wanted. Write Dave Smith, K2CHS, 54 Butler Rd., Seaside, N.Y.

THREE BC645s, \$12.50 each; two RT-27/PG4s and one DZ-2 revr, \$7.50 each. All unused in exc. condx. Johnson Adventurer with two txs, \$45. All F.B. Atlanta, Ga. Swap for DX-40, DX-100 or 15, 20 meter beam equipment. W4FVS, 2145 Brookview Dr., N.W., Atlanta, Ga.

FOR Sale: Thoradson 200 watt, 300 mil modulation xfrmr. Pri. 8,000 sec. 2500/10,000, \$20; Thoradson 300 watt, 300 mil mod. trans., pri. 6000 et. sec. 2500/4000, \$15; tubes, new, Elmac 250TH, \$20; two HK254s, \$25; G-E 814, \$10; two 811As, \$7; Jim Moran, K5HTB, 574 Lively Dr., San Antonio, Texas.

SELL: 75As with Universal Prod. detector, \$325; Sonar SRT 120P and VFO \$125; Morrow 5BR with N.J., \$50; PE103, \$20; Jones MicroMatch MM2, \$25; Homelbrew mobile 2F26 10-20, 20 watts, metered 1g-lp, \$20. Anyone selling 75A4? Harry Taubin, W2C6W, 731 Gerard Ave., Bronx 51, N.Y.

4-400A, 4-65A, 4X150A, 813. I have these tubes and am looking for 50W MultiMatch output modulator. Anybody for a swap? WIGPY, 35 Bacon, Bideford, Me.

FOR Sale: SX-71 with 15-meter band, \$125; Communicator I 6V-115V, \$125. Both like new condx. Joe Michaels, W2MNR, 80 Birch Lane, Woodmere, L.I., N.Y.

NEW Type Telrex 6EL10, \$120; 6EL15, \$125; 4EL20, \$135. Crating, freight prepaid U.S. Best condition. Robert F. Tilton, Stora, 222 So. 15th St., Omaha, Nebraska.

SELL DX-20, \$30; ARB, \$25; QP1, \$8; SCS, \$15. All in gud condx. F.O.B. Pawlusk, Okla. J. E. Turner, W6VVO, Box 682.

NC-98 for sale, with matching speaker, in fine condx; \$110. Also have DX-20 with key and 5 pair xtls, brand new, \$40. KN2DVI, 48 Club Drive, Roslyn, L.I., N.Y.

12V Communicator II, \$180; Ranger, \$180; Matchbox, \$45; Johnson Low Pass, \$10; Webster model 7 wire recorder; \$40; Sniperscope, \$50. W6UGL, 4411 Newton, San Diego 13, Calif.

RECEIVER Wanted: BC-348, BC-324, BC-312 or BC-342. E. Overbey, W9GCB, 834 Garfield St., Burlington, Wis.

YOUR Kits wired: Prices 20% of equipment price. Write Alan Wilcox, W3DXX, 65 N. Church St., Carbondale, Penna.

SALE: Globe King 500C \$550; 400A Final, push to talk 160 thru 10 88B input. Will deliver 150 miles. Richard Lindquist, WQHI, Atkins St., Middletown, Conn.

130 Good tubes, \$20 or 30c each. Send for list, key, K4MDE, Dalton, Ga.

FOR Sale: Hallicrafters SX-99 with matching speaker, in exc. condx, one year old. Price only \$120. Write Harry Bergman, 88-30 199 St., Hollis 23, L.I., N.Y.

SELL: Hallicrafters HT-9 and HT-4-B (BC-610-B) transmitters; BC-614-D speech amp; Melisner EX sig. shifter; Riders manuals, Volumes I through 14, Ashod Hovepian, W6EBM, 741 Swanston Dr., Sacramento 18, Calif.

HALLICRAFTERS S20R revr with Q multipl., best offer over \$45. Aluminum boat 14' and 5 h.p. Johnson motor (like new) will trade. Delivery within 60 miles. Inquiries answered. K2IQI, Box 528, Lake George, N.Y.

WANTED: HQ110, HC-10 or SX-101, W2TWK, 34 Eagle Lane, Farmingdale, L.I., N.Y.

RANGER: Excellent condition, latest model, time sequence keying, \$200; 8-20R revr, including Heath Q-multiplier, \$45; Moseley VPA 20-3 three element 20 meter vest-pocket beam, \$45; CDR Model AR-22 rotor and indicator, \$20. Instruction manuals for all items. F.O.B. Nutley, Me. J. J. Groce, W2I2D, 45 Joerg Ave. Phone NU 2-0766.

SELL: 375 watt transmitter, 42" enclosed rack, TVI filtered, Millen exciter final, Kenyon transformers, Modulator has own supply. Prefer to sell locally. Pictures available. First \$200 takes it. Val Martin, W2UYI, MO 5-7195.

DX-100, new condition, very little use. First \$150 takes it. Will ship prepaid. WALKP, Bowling Green, Va.

FOR Sale: Viking II and VFO, used less than 50 hours; Johnson Lo-Pass filter and D-104, Goling 88B, must sell. Asking \$250. Best offer over \$225 takes it. Local sale preferred. Harry, K2CJP, Floral Park, L.I., N.Y. Flt 7-8651.

FOR Sale: Complete station: NC-300 receiver with xtal calibrator, all-band transmitter with 813 final and extra parts; 30 ft. tower with cubical quad antenna. \$600 takes all. K3KTY, 605 Dakota St., S.E. Albuquerque, N.M.

SYLVANIA FM AM signal generator, 80 kc to 90 Mc fundamentals; sweep width 30 Kc to 700 Kc; 400 cycle, a/c to 100% A.M.; step and decade attenuators; r.f. meter; 6 tubes plus rectifier and VR; operating manual, \$35. L. M. Freq. meter and power supply; original calibration book: \$75. K2IXC, 23 Wood Ridge Lane, Sea Cliff, L.I., N.Y.

KITS assembled, wired and tested promptly. Our charge 20% of kit price. Experienced with all makes ham equipment, test instruments and high fidelity. Partly wired kits same price. Finest checking equipment. Also equipment designed and built, factory standards workmanship. Have kits sent direct to us. Surplus gear converted. (Lunched ham since 1924, ex W2AXJ). Money back guarantee. K0KJX, L. P. J. Johnson, 645-A Marshall Ave., St. Louis 10, Mo. Tel. Woodland 2-2048.

KW Thoradson MultiMatch mod., driver, filament xfrmr, 805e; kW Thoradson Stator pwr supp; BC221, pwr supp., modulations; over 400 copies QST, CQ, Radio, in fair condition. 1920's up. \$25 for the lot. W8SY, 287 Philip, Detroit 15, Mich.

SELL: New Melisner 150-watt pi-network rotary inducers, \$2.40 each; National NPW-Q gear driver with 6 gang capacitor, \$2.75. FB for VFO, receiver, etc. F.O.B. Joe Harms, W1GET, Plalstown, N.H.

WANTED: Ranger or Navigator, also Courier or Thunderbolt, factory w. no modifications. Also SX101. L. N. Johnson, W6PPF, Laverne, Minn.

KILOWATT Fone: one enclosed rack has B&W all-band final, Thoradson Class B modulator, three heavy-duty power supplies and oscilloscope monitor. Complete with all tubes, meters, relays and controls. Requires only 75-watt exciter to operate. Professional appearance, in perf. condx, \$225; pair Elmac 4-250A, new, \$37.50; pair 250TH, new, \$19.50; pair 813 used, \$9.50; 3BP1, new, \$1.50; T-17 mobile mike, \$1.50; B&W coil turret HCL, \$3.95; HTEL, \$4.95; BTCL, \$4.95; Kilowatt power supp., complete, \$20.95. Will trade. Write Hi-Fi loudspeaker and FM tuner. H. G. Price, W4LIL, 340 Ayr Hill Ave., Vienna, Va.

SALE: Viking Ranger, \$145. 10B with GTI, \$100. both in excellent condition. SS-75s, as is, \$50 each. Electronic Engineering Co., Wabash, Ind.

NATIONAL NC-83, rack & panel, No shipping. Local deal only: \$110. W2JSM, 316 George St., Babylon, L.I., N.Y. Tel. MU 9-4452.

CANADIANS! 75A4 with 2.1 and 6 kc filters, 1957 model, \$675. Will accept cheap receiver as part payment. Also new P400GG 575 watt linear, perf. with 20A, \$250. W. G. Budd, 428 7th, Saskatoon, Sask. P. Can.

SELL: Viking II with time sequence keying, Mod. 122, V.Fu. \$225; Central Electronics 20A, GTI, BC458 V.Fu. \$200; Gonset G66, 3 way power supply, \$195; Johnson mobile xmttr and VFO, \$120. Equip. built in very clean and exc. condx. With all instruction books. F.O.B. K2LIL, 87 Third St., Freehold, N.J.

SWAP Mosley 10 and 15 beam, 3-element, VPA10-15 for oscilloscope or thirty dollars. W2IYR.

FOR Sale: Collins 30K-1, completely TVI suppressed; 50 watt phone, single 4-400A final and Collins 75A-1 price for complete station, \$1160. Samuel S. Strauss, W2RCN, 5335 203rd St., Bayside, L.I., N.Y.

SALE: Johnson S.W.R. bridge with 0-1 Ma meter, \$8; Dynamotor 12V. outp. 250 and 500 V., \$12. W4W-F, 244 Parkway, Winchester, Va.

I-HRO receiver, \$50; I-HV power supply 3000v, at 1 a., \$100; I-SW3 (de), \$20; I-Premax vert. ant. with base insulator, never used, \$17; I-Gordon rotor and 3-el. beam, \$95, I-1 Kw F.A. with 806's, B&W coil and cond., never used, \$30, 1 power supp 1500 V. at 300 Ma, \$25. G. Catham, W2DOE.

WANTED: Viking II, V.F.O., gud condx, cash, write stating best price. Frederick Duff, 302 Market St., Crafon, W. Va. K8HUK.

RECEIVERS for sale: RAL with power supply, \$49; NC-120, 5 to 30 Mc., \$69.50; NC240D, \$129.50; also have Collins 310-B, \$175. Want: KP-81 or SP600. Tom Nash, M.D. W5NWA, 1100N Canterbury, Dallas 11, Texas.

WANTED: Jennings vacuum variable 300 pf type UCS, Cardwell 1500 pf variable type 8013, Weston 0-250 Ma. model. 301 bakelite case; three 4-250A tubes, Ripley Mod. #433 blower, 21CFM, B&W BT-100, 100 W. B&W mod. 850 Pi-tank inductor, Thoradson 721F07-A 5 volts, 29 amp. filament xfrmr, Larry Kleber, K9KLA, Belvidere, Ill.

FOR Sale: Harvey-Wells TBS50D, all bander, phone, c.w. xmttr, operating condx fb; Recorder Webster (Chicago model #181-1); also 322 tran., rec. and pwr supply, all in gud condx. State price. All inquiries answered. W9ZXH, 7845 S. Kimbark Ave., Chicago 19, Ill.

SELL: 2-meter Communicator II, 6-110V with all cables, whip, chassis, in great shape, not used much. 1 1/2 years old, \$150. Write or call: Nelson Friedman, 1106 Simpson St., Bronx, N.Y. Tel. DA 8-1258 or TE 8-3700.

COLLINS 75A-4, \$550; Hallicrafters HT-32, \$475, Condex perf. First come, first served. Rex Bassett, W4Q8, Box 7127, Ft. Lauderdale, Fla.

BC-348 Q, A.C., \$25; Gonset 10 watt converter, \$10; 100 watt r.f. chassis, 2-809, meters, \$10; 40 watt modulator, metered, \$15; 880-600 volt power supply, \$15; VFO-exciter, 807 final, \$15; misc. equipment. W2LHR, Frances W. Vossen, 115-71 227 St., Camden Heights, L.I., N.Y.

SELL: T-23/ARC-5 transmitter, 100-150 Mc. Brand new, with bumper mount. \$12.00. H. Hedden 333 Gullum St., Clinton, Tenn.

HAMMARLUND HQ150, latest model. Never used, in carton. Received for debt payment. \$255. Will ship. S. Alexander, 1104 Irving St., San Francisco, Calif.

BARGAINS: Send for list of reconditioned receivers and transmitters with new guarantees 10% down with up to 24 months to pay. In stock, new Collins Johnson, Hallcrafters, WRL, National, Hammarlund, Gonset, Elmae, Drake, Central Electronics, B&W, Hy-Gain, Mosley and Gotham beams, shipped on approval. Write Ken, W9C2N or Glen, W9ZKD, for your best deal. Ken-Eds Radio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

TUBES: New, postpaid, 4X150s, \$15 each; 813s, \$6 each; 5894s, \$18 each; 6222s \$15 each; 8B25s, \$6 each; 829-Bs, \$6 each. Allan Wulff, Mount Vernon, Maine.

CASH: For factory-wired Johnson Vallant and/or Ranger. State cond and price. Col. E. W. Sears, U.S.A. (ret), 4725 Bridle Trail, Santa Rosa, Calif. All letters will be answered.

MOBILE Whip antennas; base, spring, whip and gasket. List \$22, used but excellent, \$5.00; mobile dynamometers, 6v input, 645v 155 Ma. output, \$5.00; complete 6/10 meter mobile transmitter, 30 watts, cables, handset, control box, dynamotor, \$35; commercial ship-shore, \$75; electronic megaphone, \$25; wanted: lampkin lba freq. meter. Broadcast transmitter. Gonset Communicator. Higley 82 Lower Main St., Malawan, N. J.

SELL or Swap for 0-27 Railroad Gear, Viking I. coax relay, baluns, xtal mks, 2-meter converter, GF-12 navy transmitter, prefer local deal. F. Yates, K2DZS, 58 Wayside Lane, Trenton, N. J.

SELL: Station, including 8X-99, C.E. Q-multiplier, Globe Chief, xtals, key, earphones and antenna. Everything in A-1 condition, complete; best offer over \$175. Separately, make offers. KN2IKB, 312 First St., Scotia, N. Y.

COLLINS KWS-1 transmitter and 75A4 receiver. Both in excellent cond. Will sell both for \$1850 if picked up by my QTH. J. V. Heuer, 2475 Grande Ave., S.E., Cedar Rapids, Iowa.

GONSET Tri-bander 12 volt \$22; 12 volt dynamotor 1000 volt, 350 Ma., \$20. Bill Allen, Rte. 5, Athens, Tenn.

SX-101 Like new, in original packing. \$325. W2KIT, 29 Wynmore Road, Scarsdale, N. Y. Tel. 8C 3-5443.

SELL: Viking II with Collins VFO, TVI filter, suppression and 80-40-20 ant. for \$250. E. O. Johnson, 231 Snowden Lane, Princeton, N. J.

WANTED: Used SX-28 cabinet, gud cond. Kent Hughes, 113 Kusel Rd., Kallus, Ohio, WH6CR.

WANTED: Tower, over 60 ft., crank-up or tilt-over, Tri-Band beam, rotator and indicator, antenna test instruments. Please describe fully and quote price. Stan Cleby, RD #1, Burnt Hills, N. Y.

NC-300, matching speaker and 2-meter converter. Make reasonable offer. Heathkit VTVM, \$10; Gonset 10-11, \$10. W2WVF, 255 Eastern Pkwy., Brooklyn, N. Y.

FOR SALE: Transmitter Motorola FMTCU20 152-162 Mc. FM 6v dynamotor supply easily convertible to 3 meter AM. \$25 as is. WIMVO, 7 Oliver Terrace, Revere, Mass.

NOVICE 15 mtr. 30 w. c.w. xmtr. \$10; 10 mtr. converterette, \$8.50. F.O.B. W. Deane, 910 Redwood, Oxnard, Calif.

WANTED: HRO Senior coils with hand-spread. Also National Senior 8-meter. Wanted: Old HRO or Collins receiver. Emmet C. Weber, 31 Wolcott Rd., Chestnut Hill 67, Mass.

6-METER Gonset Communicator II, in original carton, 12 volt system, \$185; NC-98 with matching speaker, \$100; Simpson 260 volt ohmmeter, \$20. These items cannot be distinguished from brand new. 6 meter 4-element Gonset beam, brand new, with C.D.R. rotor and indicator. David Ojalvo, K2RBQ 55-43 251st St., Little Neck, Queens, N. Y. C. Tel: BA 9-2202.

WANTED: National receiver 1-10 with or without power supply. I have for trade 35m. Goldie Manumatic projector 300 watts. Vy gud cond. \$25 value. W2QGR, H. I. Griffiths, 39-82 65 Place, Woodside 77, L. I. N. Y. Tel. III 7-1549.

SX-100 R-46B, both. Best offer. G. Macmillan, 37 Sherwood Ave. Madison, N. J.

FOR SALE: SX100 revr HT30, exciter, HT31 amplifier (Hallcrafters 500 w. 85B station), like new, little used and in A-1 cond and original carton. A. M. Krauss, 220 York Rd., Jenkintown, Pa.

FOR SALE: 300 watt all-band 4-125A final; VFO controlled; complete except for speech amplifier. \$150. W2ALM, Harvey L. Newman, 91 Falmouth Pl., Alburtson, N. Y.

COLORADO This summer? View Haven Motel, five miles south of Denver, on U. S. 85, the road to Colorado Springs. A real ham haven. High altitude! Ham with my equipment! Mel and Edna Malley, W9BHU, U. S. 85, Littleton, Colo.

SELL: BC 224-D receiver, same electrically as the 348 series, with power supply, \$65. W2EOV, 222 Graphic Blvd., New Milford, N. J.

SELL-Trade: 3 new supplies 1000v./300 Ma., including new 866's, \$30 each; new 125 watt push-pull 6146's plate modulator, \$85. Several new and 40 watt plate modulators, \$15 and \$18 each. Dual vibrator pack 6-400v./120 Ma., \$10; 5 new supplies, 750v./250 Ma. 6.3v. 813s; 1950 Ford radio, \$10. Stan Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

DESIGNED Display cards, 8 x 11, 4, \$1.00. R. Wiegand, KN2EYS, 882 Balfour St., Valley Stream, L. I. N. Y.

SALE Local area perfect NC300, spkr, calibrator, \$325. W9GXR, 4 Wilson Road, Valley Stream, L. I. N. Y.

SELL: Like new, NC-98, \$110, with Heath Q-Multiplier and speaker. \$120. Paul Van Nostrand, 1204 Stewart Ave., Bethpage, L. I. N. Y.

SELL: Heath DX-35 xmtr with Knight VFO, both in excellent cond. \$80. K2YZX, Les Margaret, 147-56 69 Rd., Flushing 07, L. I. N. Y. Tel. LIggett 4-5618.

NEW Mercury outboards and boats. Will take ham gear on trade. Write: Boyd Reter, K9IMO, Boyd's Marine Shop, Clinton, Iowa.

MOBILE Gonset G77 xmtr, G66B revr with all-hand whip, spring and bumper mount. \$400 or best offer close. Will ship anywhere. P.O. Box 181, Alexandria, Va. K9KMW.

FOR Sale: Viking II and VFO with instrux manuals and spare tubes except for rectifiers, \$225 or best offer. F.O.B. Ambler, Penna., or trade for A54H and cash. Sam Santoro, 334 Railroad Ave., Ambler, Pa.

COMPLETE Station 75A4 Globe Beam 500B, Central Electronics 20A, Micromatch 3-el. Triband beam. all for \$1400. Will consider part trade for boat or mobile unit. Jack Godfrey, W1ZFF, 73 Whitney Ave., Milford, Conn.

HARVEY-WELLS TBS-50D with VFO and APS-50 and APS-50 power supply, \$100 cash. Roger Mayhew, Conway, N. H.

FOR Sale or trade: Factory wired Viking Vallant, Harvey-Wells Z-match, Vibroplex speed-key w/case, ARB RX. Want 500 or more watts VFO all-band xmtr. Write: K1BRI, RFD1, Topsham, Me.

TOROIDs: Unceased 88 mhy like new. Dollar each. Five, \$4.00 PP. DaPaul Co., 101 Starview, San Francisco 27, Calif.

NOVICES - Technicians, complete set of parts for QST articles for beginners, e.g., code practice oscillator, beginner's two-tube receiver, etc. Write K-G Electronics, W1KAH, Ralph Greenberg, 37 Loring Rd., Winthrop, Mass.

METERS, Westinghouse 1%, type KX-24, KC-24, Triplett model 420 DC. Two Parmet deluxe cabinets on double dolly, \$40. Free list. J. E. Whisnart, 842 23rd St., South Bend, Ind.

SELL: Heath DX35, \$50; VFI, \$17, PM1, \$14. All three, \$75. 817 Super Skydris \$35, performs like new. Building 300 watts and new receiver. Jerry Miller, W9QON, 8414 Keystone, Skokie, Ill.

WANTED: BC221: Pay cash or trade cameras. State price and model. Charles Rotkin, W1JXD, 135 Pilgrim Drive, Norwood 7, R. I.

VIKING 500, factory wired, in excellent condition, \$600; Gonset low pass filter, \$5. W9DPS, Box 1264, Sioux City, Iowa.

SELL: Viking Vallant, 6 months old, \$325; National HRO-60 with 6 meter coil, like new, \$325. Both units for \$600. Will ship. W3LSS, G. M. Snyder, RD 4, North East, Penna.

COLLINS 75A-1, excellent condition, audio, RF, IF, improved according Bill Orr's article. Speaker available, \$235 or best offer. W2EJG, 821 Rutters Road, Franklin Sq., N. Y.

WANTED: Old Call Letter license plates. KN7BC

BARGAINS: with new guarantee: KWS-1 (Demo) \$1,495.00; NC-125 \$139.50; 8-72 \$49.50; SX-101 \$319.00; NC-98 \$119.00; NC-300 \$319.00; Lyneo 600 \$69.00; Eddico RT-75TV \$25.00; Vikings Mobile \$79.00; B&W 51819 \$195.00; Lyneo 381 VFO \$12.50; Johnson Pacemaker \$385.00; Sonar MR-3 receiver \$35.00; Gonset Linears (2M) \$99.00 - (6M) \$119.00; Morrow MAH-B \$460.00 (DEMO); Globe Trotter \$29.50; Globe King 500A \$455.00; Globe King 500 \$435.00; Globe King 500B \$599.00; Scout 65A \$69.00; New Gonset Communicator II #3077B or #3025B \$199.00; Sonar SRT-120P \$199.00; Johnson Rotomate \$125.00. Free Trial, terms, write Leo, W9GQ for best deals. World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

FOR Sale: Exact copy of Handbook 600 watt 813 VFO transmitter. Works perfectly. \$175. With power supplies and 4 n. rack, \$200; Gonset Super six an Superciever, 6 or 12 volt, \$75; small port pitch motor, converted and like new cond., \$25. William Barnard, 68TA, 3959 Madison Rd., Pasadena, Calif.

FOR Sale: Globe King 500B, very little use, like new, \$475; 20A exciter, late model with less than ten hours use, with factory built deluxe 458 VFO, \$250. Howard C. McDonald, W8WDI, Shelby, Michigan.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallcrafters \$38 \$29.00; 840A \$69.00; SX99 \$119.00; SX71 \$149.00; SX100 \$229.00; Viking Adventurer \$39.00; Viking II \$199.00; Ranger \$179.00; Vallant \$349.00; 840B; 845; 8W54; NC98; NC183D; NC300; HQ129X; HQ140X; GPR90; A54; A97; PMR6; PMR7; Collins KWS1; 75A1; 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio Co., Butler, Mo.

SELL: PE103-A dynamotor, complete with cables, 6 or 12 volt mobile operation, \$25. R. H. Arp, 99 Mtside Terr., Clifton, N. J. W2TLE.

VIKING Ranger for sale, mint cond. with push talk. Used little. First offer over \$175. Herb Abrams, K2JEF, 81-31 267 St., Floral Park, L. I. N. Y.

FOR Sale: 3 in. D.C. meters: five 1 Ma., three 100 microamp, four 10 Ma., one 150 v., two 4000 v., 2 in. D.C. meters: two 1 Ma., one 5 Ma., one 15/900v. Weston, Triplett, Marlon, Westinghouse, G-E. \$4 each or \$60 for the lot. E. P. Sadler, 398 Sigourney St., Hartford, Conn.

FOR SALE: Viking Ranger, latest model, in perfect cond. \$195. B. Ross, W2PNT, 141-48 78th Rd., Flushing 67, L. I. N. Y.

SX-101 Mark III, latest production, in orig. factory carton and used only a few hours. Must sell: \$300. W1RGX, 56 Canal St., Medford, Mass.

CANADIANS: Mobile equipment, all brand new 3 months ago: Gonset G77 with modulator and 12 v. pwr sup, \$275; Rafted automatic all band antenna, complete, with remote band indicator and controls, \$75; fully automatic phase detector unit, complete, with 12 volt motor. Keeps antenna always resonant, \$35. Regency ATU-1, transistor, all band converter, \$75; Master Mobile Z matcher, \$6; M.M. bumper mount, \$8. R. Hadfield, VE3GL, 14 Sunnyria Ave. East, Toronto 18, Can. Phone BE 3-5244.

SELL: HT-33 amplifier, sacrifice, \$600. Want: HT-32 or KWM-1, SX-101. Dr. Gordon, W2UKV, 12 No. 27th, Camden, N. J.

WYOMING Hamfest July 12-13. Ham vacation in beautiful Big Horn Mountains. For information, W7QPP.

BC-1016 Recorder. Fair cond. Highest bidder. ARRL Training Aids Section, 38 LaSalle Rd., West Hartford 7, Conn. Address replies % W1GFE.

"VOICES of the Satellites." Authentic recordings of radio signals from man's first five satellites with clear explanation of what they mean. A collector's item. Everyone from nine to ninety will be thrilled to meet these space travelers. \$3.95. 5 in. reel or 10 in. LP disk. Tabern Recordings, Box 224-B, Ardmore, Penna.

NOW Available for amateurs. Factory punched and drilled chassis, panels, and boxes, ready for immediate use. Send specifications for prices. Also, aluminum sheet and angle stock. Advise requirements. P. Nugent, 149 Milliet St., Boston 24, Mass.

FOR Sale: 11-tube Navy receiver, general coverage to 30 Mc., National HRO styling, excellent sensitivity, gud condx. Best offer over \$75. Also Globe chief xmittr, used 8 months, in top condition, plus antenna relay. Best offer over \$45. Ben Lechner, 105 Joanne Terrace, Garfield, N. J.

FOR Sale: Brand new DX-40, perfect operating condns, all bands, \$65; WRL antenna tuner, \$10 (brand new). Old Howard receiver, fair operating condition all bands, \$10. Paul Gerald, 2031 Montreal Ave., St. Paul 16, Minn.

WANTED: Full details on your clubs award or certificate. Bill Clark, 8 Frances Dr., Harrisburg, Pa.

CROSBY Laboratories 67A 88B converter, \$90; General Electric YR-1 88B adapter, \$35, both like new. At Tumas, 6816 S. Rockwell St., Chicago 29, Ill.

SELL: Viking Adventurer, excellent, \$35; SX-24, very gud, \$60; Bassett vacuum tube, 15 meters, \$7. Want: Brown Electronics recorder, or equal, WIL calibration, circular or strip, single or multi-point. WILVW, 99 Water, Millinocket, Me.

SWAP: Gibson electric guitar and Gibson 5-tube amplifier for good communications receiver. W8WV, 1753 Kensington Ave., Youngstown, Ohio.

WANTED: Halliencers SX-24. Advise condition and price. Local preferred. Harry Register, 25-94 42nd St., L. I. City 3, N. Y.

SELL: Adventurer with modulation transformer, \$35. 115V inverter 1/4 KW \$25.00. K2SHX, Bob Lieberman, 117-01 Park Lane S., Kew Gardens, N. Y.

SELL: Lyaco 600 40 watt e.w. FVO ex. condx, \$55; plate modulator 20 watt w/p \$15; AT-1, \$15. 750 volt 150 mil. pwr supp., \$5. Dick KSDMY, 119 Coe St., Elm Tiffin, Ohio.

ALUMINUM for the ham. Everything you need for shielding the rig or building a beam. Also, complete beam kits, VHF Collinear arrays, \$14.20 up. Close-out special, ten meter beams, \$15.95. Write for listings. Dick's, W8JLL, Cherry Ave., Route 1, Tiffin, Ohio. Successor to Radcliffe's.

FOR Sale: Lettine 240 and VFO, excellent condition, 40-50 watt am, e.w. all coils, \$70 plus shipping. Will deliver 50 miles of Wayne, N. J. L. Tanek, K2MDY, 131 Macdonald Drive.

FOR Sale: Best offer: Johnson KW with matching desk, Ranger and HT-30 exciter. All cables, coax relay and low pass filter. W2VCZ, Hohokua, N. J. Tel: GI 4-3535.

PITTSBURGH Hamfest: Biggest yet! 21st annual hamfest of the South Hillie Brass Founders & Modulators. Sunday, August 3, 1958. South Park Totem Pole Lodge. Contests for young and old. Swap Shop. Pre-registration, \$1.50. Write or call William E. Guthrie, W3LDB, 4949 Roberts Drive, Pittsburgh 36, Pa. \$2.00 ad. cost.

ANTENNA Mosley Tribander Vestpocket VPA 3B ex. condx. Cost \$135. Will ship F.o.b. St. Pete. \$70. W4HTH, Ed Vernier, 9535 Ninth Ave., North St. Petersburg, Fla.

FOR Sale: Viking Adventurer, Eldco AM-40 modulator, Heath VFO, \$75; Viking Anderson, K5BTF, R. 3, Box 178-A, Pine Bluff, Arkansas.

TELEX 3-2, 20-meter beam, \$45; Telex 3-2, ten meter beam, \$35; Mosley 3-2, 20-meter beam, \$40; Spaulding 40 ft. self-supporting tower, \$40; Dow-key relay, \$5; Central Electronics 20A rack mount, QF-1 plus BC458 VFO, \$235. Factory wired. Robert Scalia, 4063 Magnolia Ave., St. Louis 10, Mo.

FOR Sale: T.C.S. transceiver, 100 watt complete with pwr supp. and accessories, \$60. BT20, J. O'Sullivan, KIDYE, 353 Nottingham St., Springfield, Mass.

FOR Sale: 76A4 and HT32, both in original cartons. Best offer over \$35 each. Will deliver within 100 miles, otherwise F.o.b. W3MKK, Leo Koriabin, 89 Church, Edwardsville, Pa.

INFORMATION wanted: U.F.O. radio interference observations. Contact Gesa Korchmaros, Jr., 2528 Market St., Youngstown 7, Ohio.

FOR Sale: Gonset G66 mobile receiver, late model, complete \$125 F.o.b. W9HX, 3206 W. Virginia St., Evansville 12, Ind.

MUST Sacrifice SP-400X with National speaker, for school expenses. First \$195 gets this receiver which is not surplus and has been kept in like-new condx. W4ZKS, C-106 Shawneetown, Lexington, Ky.

SELL: Collins 32V2 transmitter, V3 shielding and B4W lowpass filter installed; \$340 prepaid. Halliencers SP-44 transmitter, \$37.50; Elco condenser checker, \$100. D. L. Robinson, W8SWV, 1609 Westview Dr., New Kensington, Pa.

HEATH AT-1 and antenna coupler, \$25, excellent. Heath Q-multiplexer, \$7. F.o.b. Augusta, Ga. Richard Weaver, 2234 Darlington Drive.

SWAP: 12 gauge Winchester, 20 shotgun; gud condx, original cost \$135, for 10A or 10B, K9HJP, Greenville, Ill.

JOHNSON KW desk and Ranger, one year old, \$1200. F.o.b. Johnson 500, new, \$750 F.o.b. Sorry, no shipping on KW. Wanted: Telex 10-m beam with balun, W9KYE.

4-1000A \$30; 4-1000A, air system socket, chimney, heat radiating connector \$90; Blonder-Tongue CA-1 all channel booster lists \$85, sell new \$30; Hi-Fi equipment used, excellent. Craftsman 15 watt amplifier, C-300, \$40; Heathkit preamplifier \$19; both \$55; Fairchild pickup, diamond, and transformer \$25; Livingstone binaural arm cost \$35 sell \$10; Jim Lansing 975 ring tweeter, N-2500 crossover trans, and rheostat, \$50; Electrovoice SP-15 speaker and \$100 professionally built bulb enclosure \$100. Will trade toward Acoustic Research ARI-W, Dynakit, Ranger, DX-100 or what? Sam Thompson McConnell Hall Moscow, Idaho.

AUTOMATIC Garage Door Opener, Alliance CT for curved track sectional door, latest model, new, complete, with xmitr, revr, track, operator, instructions and warranty card worth \$75. Xtal controlled 10-meter Converter, \$8. Want: crank-up tower, Alprodec tower sections, High power linear amp, w/p/s. J. M. Hoffer, K1CQO, 24 Cherry Rd., Framingham, Mass.

ELECO PA-400 88B 400 watt amplifier, \$100; Dumont #274 scope, \$45; Harvey-Wells VPS-80 vibrator supply 6V/300V/200 Ma., \$15; Radiart #435 6V/225V/250V/300V/200Ma power supply, \$15. All like new. WILMS, 198 Euclid Ave., Waterbury, Conn.

FOR Sale: Telex Model 504A 20 meter 4-el. beam, complete with prop pitch motor, mount, weather cover and control box. Beam set by Telex to 14.275 Mc. Cash and carry, \$100. Leslie W. Phipps, W1VAP, Holliston, Mass.

TELEEX (20M-66-149) 3 el. 20 meter beam for sale. In excellent condx. Ready to ship. Any reasonable offers? Paul Bittner, Concordia Seminary, Springfield, Ill.

DON'T Fail to send for free list. Selling complete rig and other miscellaneous equipment. Bob Doersam, 3807 Mound Way, Cincinnati 27, Ohio.

HRO60, matching speaker, xtal calibrator, NBFM adapter, A. B. C. D. E. and F. \$425; Teacraft 220 Mc. converter, 14 Mc. I.F. \$20; Halliencers #40B, \$60; Gonset II 12 volts 2 mtr., \$140; Gonset 2-mtr linear ampl., \$75; Elmac P32V power supply for AF67 with connecting cord and plug, \$35. Equipment clean and used but little. Dick Hill, W9TGN, 2116 Ewing Ave., Evanston, Ill.

FOR Sale: 32V3, perfect electrically and mechanically, \$500. W2BHZ, George Hudson, R. 2, Pine City, N. Y.

FOR Sale: SX101, latest model, like brand new condx, make a reasonable offer. W1OHC, 228 Union St., Franklin, Mass.

LINEAR Amplifier (2000 watts PEP), two 4/400A parallel, made by Adams Electronics, best of components, Elmac air sockets and chimeon, vacuum variable, four meters, completely shielded and TVI suppressed with 150 CFM blower, less power supply, \$350, in perf. condx. Harvey-Wells TBS-50A less power supply, \$45; Monolscope 2-el. April 1954 C.T., \$20. Send self-addressed stamped envelope for list. At Waring, W2CPT, Box 483, Lake Ronkonkoma, L. I., N. Y.

HAMFEST June 8th Southwest from Ottawa, Illinois, on Illinois Route 71 at the La Salle County 4-H Home and Picnic Area. Same place as last year. Advance registrations accepted if in our hands before May 30th. Advance registrations \$1.00, at the gate \$1.50. A nice all-day affair, for Midwest Hams and their families, sponsored by The Starved Rock Radio Club, Contact W9MK8, G. E. Keith, Sec'y, RFD #1, Box 171, Oglesby, Ill.

S.S.B. Transformers identical and exact as used in W2EWL exciter (see QST March 1956). Brand new 3 for \$4. No C.O.D. please. S. Tucker, W2BTL, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

SELL: Holmes Institute (CRED) Course, "Practical Techniques of Supervision & Management" 41 latest lessons, plus 10 extra lessons, all textbooks, Cost new, \$150. First \$5 takes it. W3FPE, 2613 Riviera St., S.E., Washington 21, D. C.

SELL KWM-1. Perfect, brand new condition; used very little. Less power supply or accessories, \$725 or best offer. Will ship prepaid. W9CHM, 2918 Fifth St., Boulder, Colo.

SELL Globe Chib 90, \$45. Jack Ashley, K9KHZ, Tonies, Ill.

NC125 receiver, used little, \$115; RCA W84B Micro ammeter, new, \$35; 2 A RC4C, complete and 1 for spare parts, both \$25; Gonset 120 M. converter, \$15; Instruographic code machine, 10 tapes, \$12; 500 ft. 8412 Belden wire, \$15; pair of balun coils \$5.00; CD decade capacitor 0-10 pf, \$4; Millen grid dipper, full set of coils \$40. Cleaning house, other items, tubes, transformers, condensers, 201 Weston meters, etc. Want Elmac mobile equipment, W1WZT, Williams, Clinton Rd., Hewitt, N. J.

WILL sell or trade mobile Gonset Twins G66 and G77. Need late model receiver. Carroll Curb, K5VFC, Monahans, Texas.

WILL exchange the following: New, never used: Retina III-C camera with telephoto lens, wide angle lens, optical multiple finder. Viewar universal, special lens case, supplementary lens, frame finder and flash unit for new G77A transmitter with universal power supply and installation kit. K4TQC, P.O. Box 4, Brunswick, Tenn.

NEED DXCC or WAS confirmations? International Reply Paid QSL's will help \$25, \$11.00. Sample free. Hart, 467 Park, Birmingham, Michigan.

KWS1 and 75A4, new condition, in original cartons, selling due to interest in sports cars. Sacrifice, \$1950. W2LAY, 6123 Ellsworth St., Philadelphia 43, Penna.

I am a member. Are you? W1ZPT.

SELL Millen 90861 500 watt final, like new, Millen 90860 exciter, 6L5-6146 exciter, low and high voltage power supply, rack mount. Best offer over \$125 takes all. A. T. Lenny, 343 Hancock St., Malden City, Idaho.

FOR Sale: DX-20, key and crystals. Gud condition, \$30. Wayne Lee, Rd #1, Marathon, N. Y.

SALE: B4W 5100B 518B-B generator, never used, \$500; 88B receiving adapter model 370, \$100; Match Master, \$35. Dennis F. O'Neill, 200 Oak Lane, Primos, Del. Co., Penna.

WANTED: Aircraft, Airline, Military, Electronics gear and test equipment. Collins, Bendix, ARC, Airforce, Narco, BC348, BC610E, ARNG, ARN14, ART13, 51R3, MNG2A, others. We pay C.O.D. advance price, condition. Ritco, Box 156, Annandale, Va., Phone Jefferson 2-5805.

HAVE Been called by Army. Must sell SX-101 receiver (8 months old), \$325, Viking Facemaker transmitter, \$425 (4 months old); Matchbox, \$35. All in perf. condx. Will ship on receipt of money order. F. H. Leslie, K1KIK, 3727 Belmont, Cincinnati 27, Ohio.

SELL HRO5 receiver, #115; BC221 with book, \$55; audio signal generator, \$15; prop pitch motor, \$12.50; Vibroplex, \$5; three-speed record changer with GE AM17-D preamp, \$17; \$135; \$5; VHF 152A, \$35; Miller 9600 exciter, \$10; 1500 volt power supply, \$40; 300 watt Universal III modulator, \$40. Will answer all inquiries. WGBIB, Pierre Delevalle, 8438 Alma Ave., Castro Valley, Calif.

WANT 30-50 Mc. 152-173 Mc receiver, Hallcrafters S-81, 882, S-94, S-95, Policealarm or other "Civic Patrol" receiver, Trade Weber tape recorded for Communicator or 777 Trade stereo tapes for 7777 Write: Stewart-Warner Portfolios, W9WFT, 2029 Bradley, Chicago 18, Ill.

COLLINS 32V3 transmitter, for sale, A-1 condx, \$485. Also selling KW rig, CW-NBFM, Sonar VFX680 exciter, driving 807, PP 813 final. All Thorlondson power supply, Varian controlled, illuminated meters. Must be seen to be appreciated. Al Gruber, WINUZ, 104 Deerfield Rd., Cranston, R. I.

BOB Graham, WIKTJ (Graham Company) has moved to new and larger quarters at 505 Main St., Reading, Mass., telephone REading 2-4000. We are still catering only to the radio amateur with the best of new and used gear including Gonset, Elmac, National, Hammarlund, Hallcrafters, Johnson, Central Electronics, Astatic, C-D, etc. We buy-sell-trade-rent-install-service ham equipment. See us for the best deal.

ELMAC 4-250-A, two, brand new, \$25 each. WIDBS, John Savonis, 11 Dwight Court, New Britain, Conn.

SWAP for latest model factory-wired Ranger, 3 1/2 x 4 1/2 Super D Grade x Graflex, 6" Kodak Ektar, 35mm rangefinder, 35mm camera, 35mm film holders, adapter, K2 filter, film developing tank, etc. all like new, latest features, in A-1 condx. Rev. J. Terstegge, 114 W. Van Trees St., Washington, Ind.

YOU asked for it. A broad band I.F. coupler tuned to 455 Kc for double sideband reception. This unit will plug into the mechanical filter socket of a 7A4-4. Only \$12.95 postage prepaid. Busacker's, 1216 West Clay, Houston 10, Texas.

ELMAC AF-67 for sale. Perfect. Like new. Never mounted. Perfect condx. Sacrifice, only \$140. Mary, WV4JX, Box 48, Lewisburg, Tenn.

HQ-129X with matching speaker, #125; Viking II (factory-wired), #190, in A-1 condx. Dave Mueller, WSLBD; 10 Alcott Lane, Cincinnati, 18, Ohio. Phone Jackson 1-7534.

FOR Sale: Complete Elmac mobile rig, PMR-6A receiver, AF-67 transmitter new 6146, spare 6146, Carter 12 v. dynamotor, Vibrator power for recvr Elmac, all coils, filter condensers, 12v coil antenna relay, Webster all band antenna, 98' whip for 10 meters included, all 2 years old. Grade A shape; 6 volt Carter dynamotor free if bought in 10 days. Price \$3400 shipped express east of Mississippi, W. I. Hamm, W3JOD/4, 5506 Pebble Lane, Norfolk 2, Va.

COLLINS KW-1 — For sale. Finest Kilowatt available for AM, CW and SSB, with 10A or 20A exciter. Will arrange shed for 80, 40 or 20 meters. \$2250. Also Motor mobile tuner, M3-560A, MBR-5, W/12 volt RVP-250 and dynamotor, RT8-6008 AC power supply, mike, all band Bassett coil and antenna: \$450. W8JUY, Bill Martine, 221 Boardman Ave., Traverse City, Michigan.

FOR Sale: KW-1, 2 1/2 KW Collins modulation transformer, 500 watt modulation transformer with screen winding, several ephes, condensers and power transformers. Write for list. Bill, W6VPO, 10815 Rose Ave., Ontario, Calif. Tel. LY 8-2292.

FOR Sale: Coast Guard DAE-1, 240 to 2000 KC direction finder with loop assembly, original cost \$450 for \$40 and Navy RBL-4, 15 to 600 KC radio receiver (six bands) original cost, \$600 for \$25. Both sets unused in original waterproof overseas shipping cases. Sell as is F.O.B. Highland Park, Ill. William S. Loomis, 953 Central Avenue.

ORIGINAL fone-cw transmitter described on page 68 of May QST. Sell, never used, WICFE.

GLOBE KING 400 watts phone \$200. W2TCG.

WANTED: DX-100 and good receiver. HQ-100 or 8X-100, etc. Prefer package deal. Unable to pay full amount in cash, but have good credit references. Would like short trial period. State condition, lowest price, and acceptable terms. All letters answered. L. W. Larrabee, K6DTD, Box 33, Palm Springs, Calif.

SELLING Johnson 4-element 10 and 3-element 20 meter interlaced beam and 80 foot coax feed lines. Gamma match. Complete, \$125. F.O.B. Saskatoon. Victor Lerol, VE5VL, Sub #1, Saskatoon, Sask., Canada.

MUST Sell: 8X-96 #150; Eldico TR75 bandswitching with VFO and AM 40 modulator, \$75. All in A-1 condition. Larry Gittings, 117-239th St., Elmont, N. Y.

HQ140X, speaker, 100 Kc. calibrator, all perfect. Shipping F.O.B. in original carton. First \$200. Bernie Ostrofsky, W9HTF, 2912 Parkway Drive, Highland, Ind.

COLLINS 32V3 transmitter, late model, outstanding condx, no modifications or scratches; will satisfy most discriminating customer: \$525 and two meter transmitter, 829 final, excellent modulation, runs about 60 watts, all circuits metered and all components new, \$75. 800 cannot ship. W2JMB, Mahland, 28 Locust Ave., Eatontown, N. J. Tel. Eatontown 3-2166.

SELL: Custom-built kilowatt linear amplifier using new 4CX1000A. Send for details. Also custom-built 4400A kilowatt amplifier with 4X250B, AB1 modulator. Rack mounted with power supplies. Send for details on this, too. W6HHW, Wolfe, 3476 Rainbow Dr., Palo Alto, Calif.

FOR Sale: New oil condenser 50 and 3000 vdc, \$30; new Chicago Plate Rmr 4700v ac, 300 Ma.; \$20; new UTC PA100S choke, 10 by 500 Ma.; \$9; choke 9/60 by 400 Ma.; \$5; tubes 837, 81, 4/3E29, \$6 each. Want: 20A cabinets & NC-101X. Phone PO 7-2271. Charles Cope, W228D, 3 West Drive, Fort Washington, N. Y.

SWAP Or For Sale: Combination tube-dynamotor tester RCP-604A with adapter or late tubes. For RME DB-22A Preselector or shortwave receiver name value. Also Same No. 1 to 201, in exc. condx. Best offer over \$125. Joseph Milla, 320 East 42nd St., New York 17, N. Y.

PROTECT your QTH from fire with an automatic fire alarm. Placed near your rig it will be on guard day and night ready to sound its 1/4 mile howl if fire should occur. Only \$4.95. Aidon Electronics, Box 98, South Amboy, N. J.

COLLINS KW-1 Deluxe AM-CW kilowatt transmitter, recently factory modified for SSB linear operation. Excellent condition, complete with many spares, \$2,650. Write W6SRI, Bill Orr, 555 Crestline Dr., Los Angeles 49, Calif.

FOR Sale: Gonset II, new condition. Beam and 100 ft. coax included. \$150. J. E. Bright, W2BOW, 131 Nugent St., New Hyde Park, L. I., N. Y.

FOR Sale: New 8X100, only a few hours use: \$300 value for \$200. George Badger, W6XNW, 416 Waverly, Menlo Park, Calif. Tel. DA 6-8848.

CANADIANS: Sell or trade — Marconi fone/cw coil KW, PP804TH, Class B mod. PP 905s, Hallcrafters 100 watts mod. HT-4, Hammarlund HQ129XA receiver. All in A-1 condx. VE2OU, P.O. Box 355, Riviere du Loup, P. Q., Can.

CRYSTALS Allocated, Novice, General, Net, Mobile, FT-243. Any kilocycle, \$500 to \$600, \$1.00. Thin FT-243, \$1.45; 1700 to 3499, \$1.75; \$601 to 21,500 overtones 0.1%, \$1.95. Write for Marine brochure and other crystal frequencies. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

853A in A-1 condition, \$65. W1HHI, Darien, Conn.

FOR Sale: Collins 75A4 and speaker. Like new with 3.1 Kc filter used only a few hours. \$500. 20A exciter like new, \$175. Must sell to pay for new airplane. Will deliver between New York and Norfolk. James Gammill, Box 253, Patuxent River, Md.

SALE: Homebrew double-conversion receiver 1750 and 100 Kc/f.s., like HBR-14 (QST July 1957) but tunes 2.5-4.0 and 7.0-7.5 Mc without coil change; in cabinet. Miller 10035 coil; 15 and 20-meter crystal converters included. \$150. Also DX-40, new \$60. J. J. Morey, W2HFX, 210 Mountain Ave., Princeton, N. J.

SELL two complete stations: HQ-129X, #135; DX-35, \$50; Heath VFO, #17; NC-88, #70; Heath Q-Multiplier, #7; Johnson Ranger, #195; also Heath AFB amplifier, #15; Heath tube checker, #24. All in gud condx. Need cash for college. Mohr, K2RPI, R.D. #1, Westwood, N. J.

GOING INTO Navy. Selling station: RME 4300 with Heath Q multiplier and speaker, in new A-1 condx, \$185; RME 4301 SSB exciter, new in February, \$65; 20-A exciter with BC-456, 160-15 m. VFO, both new at Xmas time, now in A-1 condx, \$230; WRL linear mod. LA-1, new in February, and in exc. condx, \$100. Write for full info and pix of equipment. A. S. Jones, K4LEE, 8201 N. W. 32nd Ave., Miami.

FOR Sale: Superior TV-50 Gen-C-Motor, not used, \$35; Century pix tube Rejux-check, \$3.50; Wanted: Harvey-Weils 2 match, 300 Q 80-40-20 ant. kit. Viking Ranger, tape recorder, AM-FM tuner, Lafayette 8Y-93, speaker system enclosure. Harold Cushing, W1EJR, 16 Preston Dr., Manchester, Conn.

RCA 30-50 Mc. 30 watt output FM mobile transmitters with 6v dynamotor, \$12.95. Less dynamotor, \$7.95. Easily converted to AM or usable as is NFM. Telmobile, Inc., 60 Grant Ave., Bethpage, N. Y. All orders F.O.B. New York.

FOR Sale: Pair of brand new 4-250As, \$30 each. Two pair used 4-250As, \$15 each. UTC VM-5 600 watt MultiMatch modulation transformer, 300, B&W HDA coils (1 Kw with center link) 10 through 80 meters, \$4 each; four new 304T1S, \$9.00 each. Six new 100TH, \$5 each. WITYQ, RFD 5, Danbury, Conn.

GONSET 10-11, #15; Gonset Clipper, #5; Master Mobile whip, #132 mount, cdi, #12; Gardiner automatic code-sender with 16 practice tapes, #15; Bud code practice cone, CPO-128A, #10; Suburban Sentinel transmitter 120 watts phone, all bands, #175; Meisner Signal Shifter model 9-1090, #40. W18IK, Ed Wattman, 125 Eleventh St., Providence, R. I.

SELL: Collins 32V2 with NBFM unit and spare 4D32, in gud condx. Cash and carry, #286. John Drouglass, W2AGL, 16 Glenmary Ave., Red Bank, N. J.

SELL: HRO90, sprk. A,B,C,D and AC coils: \$350; Viking II factory-wired, Johnson VFO v.1. Keying, lo-pass filter, ant. relay, #245, 16 and 20 meter, 2-nd. Electro-Fab beams, CD rotator, 40' crank-up tower. Sorry, no shipping. All in exc. condx. Virgil Owen, 4032 W. Ave., 40 Los Angeles, Calif.

FOR Sale DX-20 \$30 KNIDW, 35 Thornton, Revere, Mass. Locals only!

COLLINS 32V1 with factory modifications to include best features of the 32V-2 and 32V-3. TVI suppressed. Recalibrated at Collins plant in February 1958, \$295. HQ-129X revr, #125. Robert Olson, W6MBR, 1069 27th St. N.E., Cedar Rapids, Iowa.

MOBILEERS! Will trade for fixed station receiver or transmitter of equal value, a 49 Oldsmobile, in top condx and the following gear for above car: 90 amp. alternator, Gonset 666 revr, TBS-50D and PE103. Will deliver within 300 mile area. W1ZWL.

TUBES: Brand New Elmac 4-250A's \$25.00, 4-125A's \$15.00, 4-65A \$30.00, 304T1 \$8.00, 4E27 \$6.00, 800 \$2.00, 802 \$2.00, 803 \$2.00, 810 \$8.00, 813 \$5.00, 815 \$1.75, 829B \$6.00, 332A \$6.00, 335 \$2.00, 336 \$1.50, 806A \$1.50, 923 \$2.00, 926 \$2.25, 2500 \$17.50, 211 \$2.00, 8003 \$3.50, HY25 \$2.00, HK54 \$6.00, 616's \$1.50. Plate transformers, new, 115V/2300VCT-500MA \$25.00, 115V/3200VCT-250MA \$25.00, 115V/1850VCT-CT. 500MA \$15.00, 115V/7500VCT-08MA \$18.00, Collins Chokes 4HY-500MA \$5.00, 4HY-500MA \$5.00, R.C.A. Signal Generator #167A, 100KC-31MC \$35.00, ART-13 Modulation Transformer \$5.50, all guaranteed, C.O.D.'s OK, Bill Ship W4FHY, Box 178, Ellenton, Florida.

WANTED: All types communications receiver, transmitters, test equipment, etc., especially 75A, 32V, 51A, BC-348, BC-342, BC-610, BC-221, CUA-8, etc. Cash or trade for NEW Ranger, Valiant, Thunderbolt, HT-32, HQ-160, Gonset, Fisher Hi-Fi, Bell, etc. Write Tom, W1AFN, Altronics-Howard Co., Box 19, Boston, 1, Mass. (Richmond 2-0048) Store: 275 Fried St. Boston (near North Station) 60 Spring St., Newport, R. I.

FOR Sale: Johnson Adventurer, Eldico 40-watt modulator, Heathkit VFO. All for \$70. W5RJA, 1704 Avenue L, Brownwood, Texas.

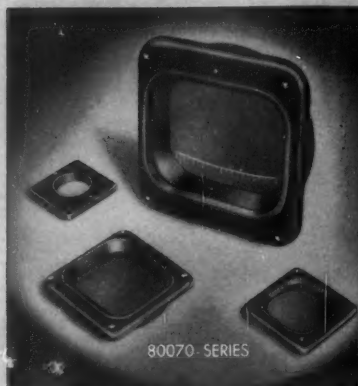
VAN SICKLE gives one radio directional finder free with purchase of National NC-66, \$120. Limited quantity, W9KJF, 4131 N. Keystone Ave., Indianapolis, Ind.

SELL: Plate transformer Super Electric Prod. Corp. Model ST-125, 2600 volts each side ct. at 400 Ma., CC8, 110 volt primary. Weighs an even 50 lbs. \$30 F.O.B. Hartford, WILKE, % ARRI, Hq.

Designed for



Application



**NOS. 80070 & 80170 SERIES
BEZELS FOR
CATHODE RAY TUBES**

Designed for Application. A complete line of both metal and plastic cathode ray tube bezels, including plain, illuminated reticule, and camera mount styles, for use with all types of tubes (regular, flat face, square, etc.) and our complete line of stock and custom built Mu-Metal and Nicoloi shields.

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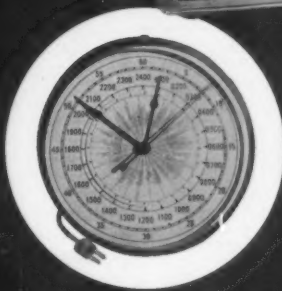
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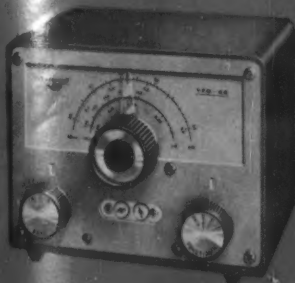
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